

39. Studies in the Fossorial Wasps of the Family Scoliidae, Subfamilies Elidinae and Anthoboscinae. By ROWLAND E. TURNER, F.Z.S., F.E.S.

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(Plates LXXXI.-LXXXIII.\*)

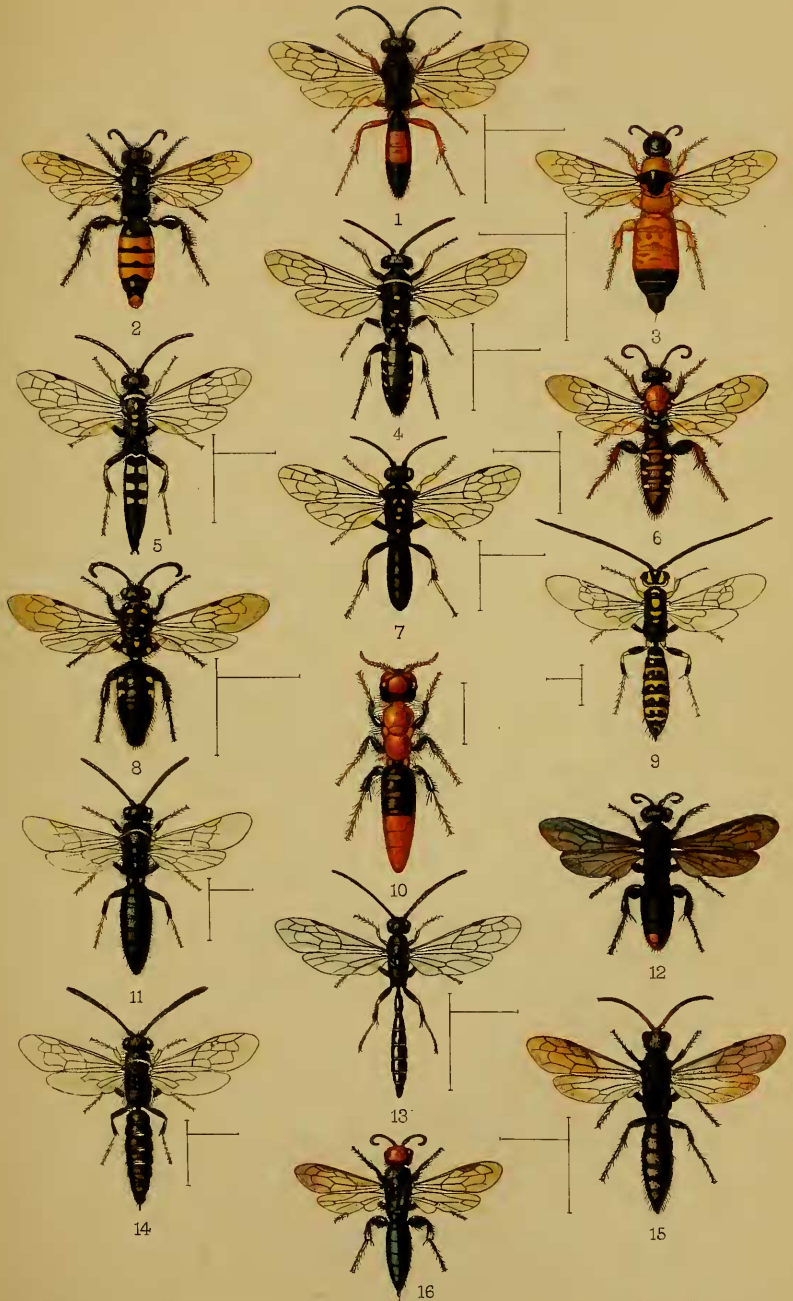
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The following notes on the Elidinae and Anthoboscinae will, it is hoped, facilitate the study of these neglected groups, the latter of which especially has been very little understood by many authors, who have touched on it merely as describers of new species, Saussure alone having seriously studied the group. The best work on the Elidinae has been done by the same author, but the material at his disposal was very limited.

I am indebted to Dr. Brauns, of Willowmore, S. Africa, for valuable assistance with many carefully collected specimens. The material available is still insufficient for a revision of the species of *Myzine*, as to which much confusion still exists.

The species which I have not seen are marked with an asterisk.

\* For explanation of the Plates see pp. 753-754.

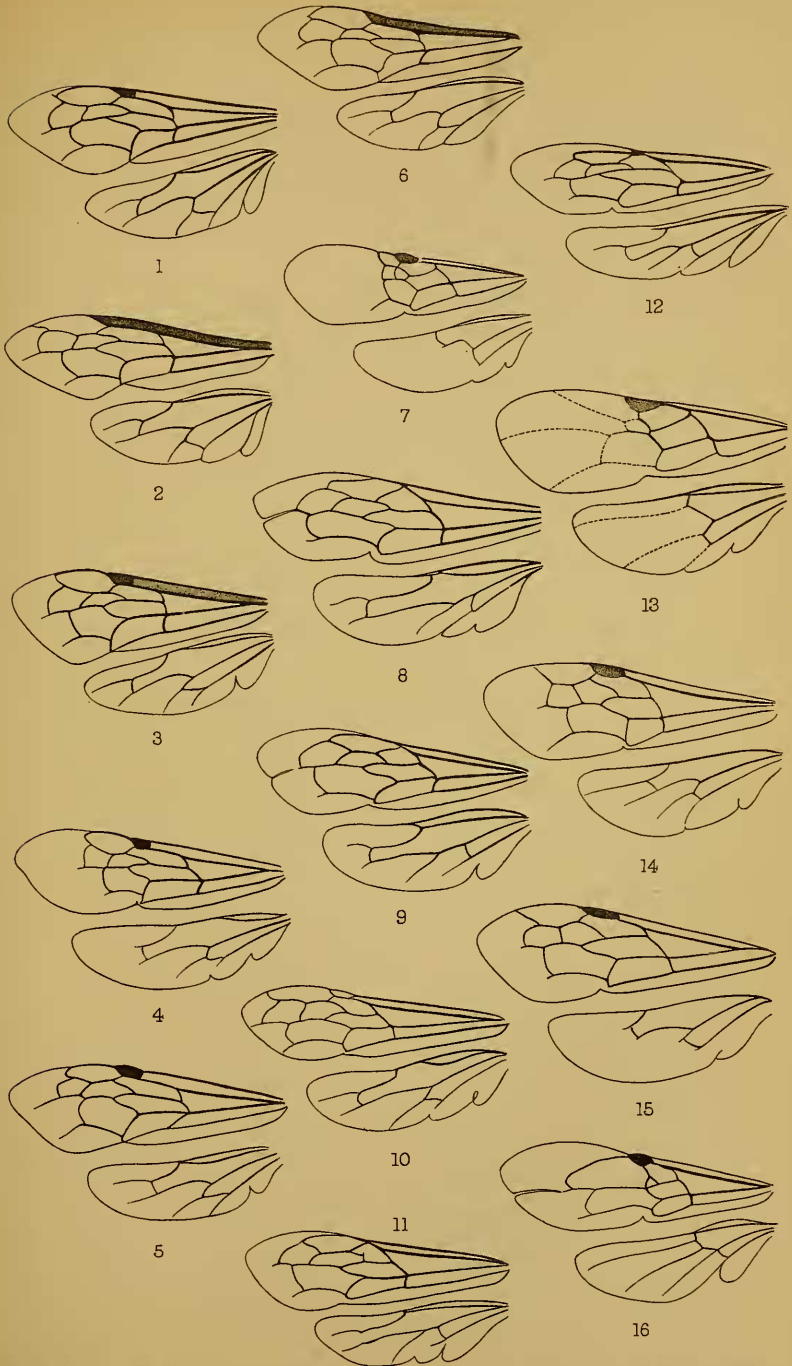


Horace Knight del. et lith.

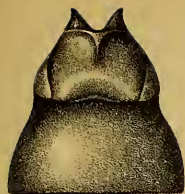
West, Newman chr.

FOSSORIAL WASPS.









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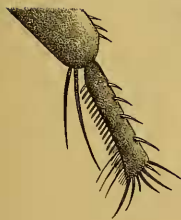
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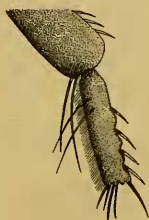
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## Family SCOLIIDÆ.

## Subfamily ELIDINÆ.

## BRAUNSOMERIA, gen. nov.

♀. Apterous; mandibles acute at the apex, with a rather indistinct tooth on the inner margin near the apex; antennæ twelve-jointed, the first joint of the flagellum very small and almost concealed by the apex of the scape. Head almost rectangular, the posterior angles slightly rounded; eyes oval, touching the base of the mandibles, rather small, separated by a distance at least as great as their own length from the posterior angles of the head; ocelli absent, their position indicated by large punctures. Thorax much narrower than the head; pronotum rather longer than its greatest breadth; mesonotum very short, almost covered by the pronotum, the tegulæ more or less developed; scutellum narrower than the pronotum, broader than long; median segment nearly as long as the pronotum, flattened on the dorsal surface, broadened from the base to the apex. Sides of the head and thorax and base of the abdomen thinly covered with long hairs. Abdomen longer than the head and thorax combined, shining, the apical segment long and more or less acute at the apex, stricture between the first and second ventral segments well developed. Intermediate coxæ rather widely separated, posterior coxæ contiguous, intermediate and posterior tibiæ spinose, tarsal ungues simple.

♂. Winged; stigma rather large, situated at about three-fifths from the base of the wing; radial cell shorter than the stigma; three cubital cells, the second and third small, not reaching the apex of the radial cell, each receiving a recurrent nervure; cubital and discoidal nervures not continued beyond the cells. Medial cell of the hind wing not emitting veins from the apex. Antennæ in the typical species long and slender, thirteen-jointed, the first joint of the flagellum almost concealed in the apex of the scape, the antennæ much longer than the abdomen; antennal tubercles well developed. Head strongly convex; ocelli present. First abdominal segment with a short petiole, the segment, including the petiole, a little longer than the second segment, suddenly widened at the apex of the petiole. Apical segment with a recurved spine, the apical emargination of the dorsal segment shallow. Eyes entire, not emarginate.

The characters given here for the male will doubtless be found not to apply to all species of the genus; but the important characters in the neurulation separating the males from *Myzine* are the larger stigma, the blunter apex of the radial cell, the fact that the cubital and discoidal nervures are not continued beyond the cells as in *Myzine*, and that no veins are emitted from the median cell of the hind wing, there being two veins in *Myzine*.

Type of the genus, *Braunsomeria quadraticeps*.



BRAUNSOMERIA QUADRATICEPS, sp. n. (Pl. LXXXI. figs. 9, 10; Pl. LXXXII. fig. 7.)

♀. *Rufo-ferruginea*; *mandibulis apice, vertice, capite lateribus*; *segmentis abdominalibus tribus basalibus nigris*; *femoribus tibiisque fuscis, calcariis albidis.*

*Long.* 8 mm.

♀. Head broader than long, fully half as broad again as the pronotum; mandibles with a blunt tooth on the inner margin near the apex, another near the middle of the inner margin, acute, and another smaller nearer the base. The whole insect shining, with a few scattered punctures. Pronotum longer than broad, a little longer than the median segment. Dorsal abdominal segments broadly depressed at the apex, the basal portion of the segments produced into a slightly raised rounded mark on each side; apical segment very narrowly rounded at the extremity.

♂. *Niger*; *mandibulis, clypeo macula mediana nigra, scapo subtus apice, tuberculis antennalibus, macula parva frontali, margine inferiore oculorum, linea undulata verticali, pronoto macula utrinque antice et fascia lata postice, mesonoto macula quadrata, scutello fascia lata, postscutello, mesopleuris fascia, segmento dorsali primo fascia apicali, ceteris fascia apicali macula nigra utrinque, segmentisque ventralibus 2-6 fascia bisinuata apicali pallide flavis, alis hyalinis, venis testaceis.*

*Long.* 6 mm.

♂. Antennæ slender, longer than the abdomen, the inter-antennal tubercles prominent. Clypeus very short and broad, very shallowly emarginate at the apex. Head very strongly convex, cheeks as broad as the eyes. Head and thorax coarsely but not very closely punctured, median segment finely and closely punctured-rugulose; abdomen shining, very sparsely and shallowly punctured. Pronotum shorter than the mesonotum, narrowed anteriorly, the anterior margin straight, posterior margin very feebly arched. Median segment steeply sloped posteriorly, not truncate. Petiole of the basal abdominal segment occupying less than half the length of the segment, the remainder of the segment slightly inflated; the first segment, including the petiole, only a little longer than the second. The segments not constricted; hypopygium forming a long recurved spine; apical dorsal segment convex, shallowly emarginate at the apex. Stigma large, twice as long on the costa as broad, nearly twice as long as the radial cell, which is broadly rounded at the apex. Three cubital cells on the right side, two on the left; on the right the second abscissa of the radius is very short, the third about equal to the first and second combined, but shorter than the second transverse cubital nervure, second recurrent nervure received close to the apex of the third cubital cell.

*Hab.* Willowmore, Cape Colony; January (*Dr. Brauns*).

The female is the type.

I have little doubt that links will be discovered connecting both sexes of this genus with *Myzine* through the short-winged *Pseudomeria* section in the females, and through species with somewhat more extended neuration in the males. But the apterous condition of the female and the differences of neuration pointed out in the description of the male seem to me to be sufficient reason for founding a new genus. The female shows a strong resemblance to female Thynnidæ of the genus *Eirone*, also to the Bethylid genus *Apenesia*. I have not been able to examine the mouth-parts, but it is likely that they would show atrophy of some parts. The entire eyes of the male are also noticeable as contrasted with the shallowly emarginate eyes of *Myzine*.

BRAUNSOMERIA ATRICEPS, sp. n.

♀. *Nigra*; *mandibulis basi, clypeo, antennis, thorace, segmento mediano, pedibus pygidioque apice ferrugineis.*

*Long. 5 mm.*

♀. Mandibles acute, with a very small ill-defined tooth on the inner margin near the apex. Head rectangular, a little broader than long, very slightly convex, shining, with a few scattered punctures. Thorax shining, with a few scattered punctures on the pronotum, the median segment more closely punctured. Pronotum longer than broad, slightly narrowed anteriorly, narrower than the head by about one-third; mesonotum very short, the tegulæ rather better defined than in *quadriceps*; scutellum rounded posteriorly, broader than long. Median segment a little shorter than the pronotum, slightly broadened from the base, a little broader than long and obliquely sloped posteriorly; sides of the thorax and median segment sparsely clothed with long yellowish hairs. Abdomen shining, finely aciculate, the basal segment truncate anteriorly, with a short petiole not more than half as long as the posterior coxæ; the third segment the broadest; a semicircular small raised mark on each side of dorsal segments 2-5; sixth segment smooth, pointed at the apex. The constriction between the two basal ventral segments is well marked. The eyes are smaller than in *quadriceps* and are separated from the posterior angle of the head by a distance equal to about three times their own length.

*Hab.* Algoa Bay, Cape Colony; November (*Dr. Brauns*).

MYZINE(?) STIGMA, sp. n. (Pl. LXXXI. fig. 11; Pl. LXXXII. fig. 13.)

♂. *Niger*; *mandibulis basi, pronoto anguste postice, tegulis, tibiis subtus tarsisque basi pallide flavis; alis hyalinis, venis perlucidis, stignate maximo, pallide flavescenti; oculis haud emarginatis, antennis abdomine brevioribus; cellula radiali oblitterata, cellula cubitali secundo pæne oblitterata.*

*Long. 7 mm.*

♂. Clypeus very short, transverse. Antennæ about as long as

the thorax and median segment combined, not very slender, of about even thickness throughout, inserted a little nearer to the eyes than to each other. Eyes not emarginate, their inner margins parallel; posterior ocelli a little nearer to each other than to the eyes. Head convex, closely punctured, with a frontal sulcus reaching to the ocellus; antennal tubercles not developed. Thorax rather sparsely punctured. Pronotum rather short, as broad as the head, the anterior margin straight, the posterior margin widely and feebly arched. Scutellum large, a little shorter than the mesonotum. Median segment short, almost smooth, with a median sulcus, truncate posteriorly. Abdomen subsessile, the basal segment broad, not constricted at the apex on the dorsal surface, deeply divided from the second on the ventral surface, all the segments sparsely punctured and shining; the apical segment rather deeply triangularly incised for the reception of the long aculeus of the hypopygium; the whole abdomen about equal in length to the head, thorax, and median segment combined. Stigma very large, about twice as long as the greatest breadth; only one cubital cell and one recurrent nervure, which is received on the cubitus just beyond the angle of the cubital cell, the cubitus continued just beyond the point of reception of the recurrent nervure, the radial cell and all neuration beyond the stigma obliterated. Median and submedian cells of the hind wing present, but no neuration beyond them, the median cell not extending very far beyond the submedian.

*Hab.* Willowmore, Cape Colony (*Dr. Brauns*).

This very distinct species will probably prove to be generically distinct from *Myzine*. It approaches most nearly to *M. swalei* Turn. and *M. braunsi* Turn., but differs in the reduced neuration, the entire eyes, the more robust and subsessile abdomen, and the much broader stigma. But until the female is known I prefer to leave it provisionally in *Myzine*. From *Braunsomeria*, to which the neuration approaches more nearly than to *Myzine*, it may be distinguished by the much more robust build, the much shorter and stouter antennæ, and the deeper emargination of the apical segment.

MYZINE BRAUNSI, sp. n. (Pl. LXXXI. fig. 14; Pl. LXXXII. fig. 14.)

♂. *Niger*; *mandibulis basi, pronoto fascia angusta postice, segmentis dorsalibus 2-6 macula transversa mediali apice, maculaque curvata laterali utrinque, tegulis, tarsis articulo apicali excepto, tibiis anterioribus omnino, intermediis posterioribusque basi pallide flavis; alis hyalinis, venis perlucidis, stigmatè pallide testaceo.*

*Variat segmentis dorsalibus macula mediali oblitterata.*

*Long.* 5-8 mm.

♂. Clypeus much broader than long, closely punctured and shallowly emarginate at the apex. Antennæ gradually thickened

towards the apex, the terminal joint twice as thick as the fourth; the antennæ about as long as the head, thorax, and median segment combined. Eyes slightly emarginate on the inner margin; posterior ocelli nearly as far from each other as from the eyes. Head and thorax closely and not very finely punctured; pronotum narrower than the head, shorter than the mesonotum, narrowed anteriorly, the anterior margin straight, the posterior margin widely but not strongly arched. Median segment transversely rugose, with a longitudinal depression in the middle, truncate posteriorly, the surface of the truncation coarsely transversely striated. Abdomen narrower than the thorax and nearly half as long again as the head, thorax, and median segment combined, finely and sparsely punctured, the segments scarcely constricted at the base; petiole of the basal segment very short, the segment abruptly broadened and slightly swollen, nearly as long as the second segment without including the petiole. Apical segment convex, the incision at the apex subtriangular, not quite as deep as its apical breadth. Tarsal ungues simple. Cubital and discoidal nervures not continued beyond the cells, stigma not rounded on the inner margin, three times as long as the greatest breadth; radial cell acute at the apex, produced far beyond the third cubital cell, second and third abscissæ of the radius nearly equal in length, second recurrent nervure received just before the middle of the third cubital cell. Median cell of the hind wing not emitting any veins from the apex.

*Hab.* Willowmore, Cape Colony; January to March (*Dr. Brauns*).

This is allied to *M. swalei* Turn., but differs in the shorter and stouter basal abdominal segment, in the sculpture of the median segment, and in the translucent nervures of the wings. Both differ from typical *Myzine* by not having the cubital and discoidal nervures continued beyond the cells and in the absence of the two veins emitted from the apex of the median cell of the hind wings.

MYZINE CONSTRICTIVENTRIS, sp. n. (Pl. LXXXII. fig. 15; Pl. LXXXIII. fig. 12.)

♂. *Niger, dense albo-pilosus; mandibulis basi, pronoto margine posteriore, tegulis basi, segmentis dorsatibus 2-6 macula mediana apicali et macula transversa utrinque, tibiis basi tarsisque pallide flavis; alis hyalinis, venis brunneis.*

*Long.* 10-12 mm.

♂. Clypeus broad and short, shallowly emarginate at the apex. Eyes distinctly convergent towards the clypeus, the inner margin not emarginate, almost straight. Antennæ inserted nearer to each other than to the eyes, almost as long as the abdomen, moderately stout and of almost even thickness throughout. Posterior ocelli a little nearer to the eyes than to each other. Head and thorax closely and strongly punctured; pronotum short, narrower than the head, the anterior margin straight, the posterior margin very feebly arched. Median segment coarsely

rugose, almost vertically truncate posteriorly. Abdomen much longer than the head and thorax combined, not very slender, sparsely punctured, the segments rather strongly constricted at the base, sessile, the first segment no longer than the second. Sixth dorsal segment more coarsely punctured, not convex, the lateral margins raised, the apical emargination shallow, much broader at the apex than deep. Radial cell broad, nearly twice as long on the costa as the greatest breadth; second abscissa of the radius distinctly longer than the third, second recurrent nervure received close to the middle of the third cubital cell.

*Hab.* Willowmore, Cape Colony; October to January (*Dr. Brauns*).

This species is easily distinguished by the absence of any emargination of the eyes, the shallow emargination of the apical dorsal segment, the strongly constricted abdominal segments, and the broad radial cell. The cubital and discoidal nervures are continued very little beyond the cells, and the two nervures emitted from the apex of the median cell of the hind wing are very short.

MYZINE UMBRATICA, sp. n.

♀. *Nigra, mandibulis pygidioque fusco-ferrugineis; segmentis dorsalibus 2-3 macula laterali utrinque alba; alis fusco-violaceis.*

*Long.* 10 mm.

♀. Shining and almost smooth, coarsely but not very closely punctured round the base of the antennæ; a few scattered punctures on the vertex, pronotum, mesonotum, and scutellum, pro- and mesopleuræ strongly but not very closely punctured; median segment closely and rather finely punctured at the base, almost smooth in the middle and at the apex, a few obscure striæ at the posterior angles; abdomen almost smooth, with a few small punctures on the apical portion of the segments. Long black pubescence on the sides of the thorax; calcaria whitish. Eyes rather narrowly ovate, cheeks as broad as the eyes; ocelli small, the posterior pair about as far from each other as from the eyes. Antennæ smooth and shining, the scape beneath punctured and clothed with long hairs. Head subrectangular, half as broad again as long, much broader than the thorax. Pronotum about twice as broad as long, the posterior margin almost straight. Mesonotum only half as long as the pronotum and a little shorter than the scutellum, the parapsidal furrows very distinct. Apical segment of the abdomen convex, long, and pointed. Wings of moderate length, reaching to the fifth abdominal segment, the stigma situated about halfway between the base and apex; venation similar to that of *rufifrons* Fabr.

*Hab.* Fourteen Streams, Cape Colony; January (*Dr. Brauns*).

There is only a very obscure median sulcus on the median segment. The slit in the fore wing extends from the termination of the cubitus just beyond the third cubital cell to the margin of the wing.

MYZINE ABDOMINALIS Guér. (Pl. LXXXII. fig. 16;  
Pl. LXXXIII. fig. 5.)

*Meria abdominalis* Guér. Rev. de Zool. iii. p. 365 (1839), ♀.

*Plesia continua* Cam. Rec. Albany Mus. i. p. 299 (1905), ♂.

*Hab.* Willowmore; Burghersdorp, Cape Colony.

Taken *in copulâ* by Dr. Brauns. The colour in the female is variable, the head being sometimes ferruginous.

*Key to the Ethiopian Species of Elis (Mesa).*

*Females.*

- |  |                               |
|--|-------------------------------|
| 1. Basal joint of posterior tarsi with a row of spines beneath .....   | 2.                            |
| Basal joint of posterior tarsi unarmed or with a scopa only beneath .....  | 7.                            |
| 2. Radial cell distinctly separated from the costa for more than half the length. Black, two apical abdominal segments red .....                             | <i>E. alicie</i> Turn.        |
| Radial cell separated from the costa at the apex only .....  | 3.                            |
| 3. Abdomen ferruginous, the basal segment only black. Abdomen black .....  | * <i>E. abdominalis</i> Guér. |
| 4. Thorax and abdomen entirely black .....   | 4.                            |
| Thorax more or less red, the pronotum shorter than the scutellum .....   | 5.                            |
| 5. Sixth dorsal segment punctured; calcaria of the hind tibiæ black .....  | 6.                            |
| Sixth dorsal segment striate; calcaria whitish .....   | * <i>E. peringueyi</i> Sauss. |
| 6. Vertex red, much more sparsely punctured than the front, mesonotum and scutellum black. Spur of the posterior tibiæ not strongly bent near the base ..... | * <i>E. hottentota</i> Sauss. |
| Vertex black, as closely punctured as the front, mesonotum and scutellum red. Spur of the posterior tibiæ strongly bent near the base .....                  | <i>E. adelogamia</i> Turn.    |
| 7. Abdomen wholly bright ferruginous .....   | <i>E. auriflua</i> Turn.      |
| Abdomen black, the two apical segments sometimes ferruginous red .....   | <i>E. torrida</i> Sm.         |
| 8. Lateral margins of the median segment acute; head, thorax, legs, and abdomen black .....  | 8.                            |
| Lateral margins of the median segment not acute ...  | 9.                            |
| 9. Median segment twice as broad as the length in the middle, the lateral carinæ sharply defined. Antennæ fusco-ferruginous at the base, black at apex ..... | 10.                           |
| Median segment about three times as broad as the length in the middle, the lateral carinæ not sharply defined. Antennæ wholly orange .....                   | <i>E. saussurei</i> Turn.     |
| 10. Head, thorax, and abdomen black .....  | <i>E. xanthocera</i> Gerst.   |
| Head, thorax, and abdomen more or less red .....   | 11.                           |
| 11. Legs black. Punctures of front and pronotum coarse and confluent longitudinally .....  | 12.                           |
| Legs ferruginous. Punctures of front and pronotum not coarse and well separated .....  | <i>E. innotata</i> Turn.      |
| 12. Apical or two apical segments of abdomen ferruginous red, head and thorax black .....  | <i>E. erythropoda</i> Turn.   |
| Abdomen wholly black, head and sometimes thorax more or less red .....   | 13.                           |
| 13. Two apical segments of the abdomen red; fore wings fuscous except at the apex; sixth dorsal segment punctured .....                                      | 14.                           |
| Apical segment of abdomen only red; wings hyaline; sixth dorsal segment striate .....  | <i>E. apicipennis</i> Turn.   |
|  | <i>E. pyxidata</i> Turn.      |

- |  |  |
|--|--|
| 14. Wings subhyaline; head, pronotum, mesonotum, and scutellum red; vertex punctured ..... | <i>E. heterogamia</i> Sauss.           |
| Wings fusco-violaceous .....   | 15.                                    |
| 15. Vertex punctured; pronotum closely punctured; legs black .....                         | <i>E. hova</i> Turn.                   |
| Vertex smooth; pronotum sparsely punctured; legs red .....                                 | 16.                                    |
| 16. Head red, thorax black .....   | <i>E. ruficeps</i> Sm.                 |
| Thorax more or less red .....  | <i>E. ruficeps atopogamia</i> [Sauss.] |

### Males.

- |  |                              |
|--|------------------------------|
| 1. Apical dorsal segment not incised at the apex .....   | 2.                           |
| Apical dorsal segment more or less incised at the apex .....   | 4.                           |
| 2. Third dorsal segment of the abdomen measured from the transverse basal furrow distinctly shorter than its basal width. Abdomen wholly without yellow markings ..... | <i>E. incerta</i> Turn.      |
| Third dorsal segment measured from the transverse basal furrow distinctly longer than its basal width. Abdomen with very small yellow markings .....                   | 3.                           |
| 3. Apical dorsal segment flattened, with raised margins and a median carina; pronotum entirely black ...   | <i>E. asmarensis</i> Turn.   |
| Apical dorsal segment convex, the margins not raised, without a distinct median carina; pronotum with a yellow band on the posterior margin .....                      | <i>E. ametalla</i> Turn.     |
| 4. Abdomen entirely black, sometimes with blue sheen .   | 5.                           |
| Abdomen banded with yellow .....   | 6.                           |
| 5. Wings more or less shaded with fuscous or violaceous; incision of the apical segment half as deep as its apical width. Length 15-18 mm. ....                        | <i>E. ruficeps</i> Sm.       |
| Wings clear hyaline; incision of apical segment much less than half as deep as its apical width. Length 13 mm. ....  | <i>E. nodosa</i> Guér.       |
| 6. Apical dorsal segment flattened with raised margins; head large, the cheeks more than half as broad as the eyes .....   | <i>E. capitata</i> Sm.       |
| Apical dorsal segment convex, with a median carina; head small, the cheeks much less than half as broad as the eyes .....  | 7.                           |
| 7. Not very slender; the apical dorsal segment with an incision nearly as deep as broad at the apex .....  | <i>E. spoliata</i> Turn.     |
| Very slender; incision of the apical dorsal segment not more than half as deep as its apical breadth ...   | <i>E. longiventris</i> Turn. |

*ELIS* (MESA) *ALICLÆ*, sp. n. (Pl. LXXXI. fig. 12; Pl. LXXXII. fig. 8; Pl. LXXXIII. fig. 9.)

♀. *Nigra*; segmentis abdominalibus quinto sextoque rufo-ferrugineis; pedibus albo-pilosus, calcaribus albidis; alis nigro-cæruleis.

Long. 18 mm.

♀. Head and thorax coarsely punctured-rugose, the punctures on the front finer than on the vertex; clypeus very broadly rounded at the apex, with two or three indistinct teeth on the margin; scape shining and sparsely punctured, clothed beneath with long whitish hairs; the nine apical joints of the flagellum opaque. Front thinly clothed with white hairs, the interantennal prominence well developed and feebly bilobed. Inner margin of the eyes slightly sinuate; posterior ocelli about twice as far from

the eyes as from each other. Pronotum nearly as broad as the head, widely emarginate anteriorly; scutellum with a large triangular rugose area from the base to the narrowly truncated apex, the sides smooth and opaque. Postscutellum and median segment smooth and opaque, a few large punctures on the middle of the postscutellum; median segment raised towards the median line, with a narrow margined median groove, the posterior truncation of the segment coarsely but shallowly punctured, the sides of the segment closely obliquely striated. Abdomen shining, finely and very sparsely punctured, the punctures larger on the ventral than on the dorsal surface, and rather closer at the apex of the segments than at the base; the apical dorsal segment broadly rounded, and longitudinally punctured-striate. Second abscissa of the radius a little shorter than the third; first recurrent nervure received beyond the middle of the second cubital cell, second at two-thirds from the base of the third cubital cell. Radial cell detached from the costa for about half its length.

*Hab.* British East Africa, Makindu, 3300 ft. (*S. A. Neave*); April 5-7, 1911 (*A. E. R. C.*).

This fine species does not seem to be very nearly allied to any other, being well distinguished from the *ruficeps* group by the very coarse sculpture of the head and thorax. The basal joint of the posterior tarsi is furnished with a closely-set comb of small spines beneath.

The description of *Cosula donaldsoni* Fox corresponds rather closely to this species, but the clypeus is tridentate on the apical margin, not rounded, with indistinct teeth as in the present species, and I think Fox was too careful a worker to have confused the genera.

ELIS (MESA) AURIFLUA, sp. n.

♀. *Nigra*; *mandibulis basi, pronoto, mesonoto scutelloque rufoferrugineis*; *alis infuscatis*.

*Long.* 12 mm.

♀. Head and pronotum closely and rather strongly punctured; mesonotum and scutellum much more sparsely punctured, smooth in the middle; pleuræ coarsely punctured; median segment finely and closely punctured, the median groove narrow and shallow, margined by low carinæ, the posterior truncation more shallowly punctured. Abdomen rather closely and not very finely punctured, the apical segment closely longitudinally striated. Sides of the median segment obliquely striated. Clypeus transverse at the apex. Eyes very feebly and widely emarginate on the inner margin; posterior ocelli further from the eyes than from each other. Head more than half as broad again as long, broader than the thorax. Pronotum short, not as long in the middle as the scutellum, the anterior margin straight, the posterior margin widely arched. Pubescence sparse and whitish, calcaria whitish. Radial cell only separated from the costa at the apex, which is subtruncate; first abscissa of the radius as long as the second,



but shorter than the third; recurrent nervures received close to the middle of the second and third cubital cells.

*Hab.* Johannesburg, Transvaal (*Kobrow*). Received from Dr. Brauns.

Nearly allied to *adelogamia* Turn. and *diapherogamia* Sauss. From the former it may be distinguished by the entirely black head, and by the closer and more even puncturation of the head and pronotum, the vertex being almost smooth in *adelogamia*; from *diapherogamia* it may be distinguished by the much shorter pronotum, the stronger and closer puncturation, and the colour of the head. *E. hova* has the pronotum longer than in the present species or *adelogamia*.

The comb on the underside of the basal joint of the posterior tarsi is present, but the teeth are few. The upper spur of the hind tibiae is strongly bent near the base.

ELIS (MESA) ADELOGAMIA Turn.

*Plesia (Mesa) adelogamia* Turn. Ann. & Mag. Nat. Hist. (8) i. p. 503 (1908), ♀.

*Hab.* Maseru, Basutoland; Lichtenburg, Transvaal.

This is nearly allied to *E. ariflua*, but differs as noticed in the key.

ELIS (MESA) RUFICEPS Sm. (Pl. LXXXII. figs. 9, 10; Pl. LXXXIII. figs. 2, 4, 10, 15, 16.)

*Myzine ruficeps* Sm. Cat. Hym. B. M. iii. p. 75 (1855), ♀; Turner, Ann. & Mag. Nat. Hist. (8) i. p. 503, ♂; Turner, Ann. & Mag. Nat. (8) vii. p. 304 (1911), ♂ ♀.

ELIS (MESA) RUFICEPS, subsp. ATOPOGAMIA Sauss.

*Plesia (Mesa) atopogamia* Sauss. in Grandidier, Hist. Madagascar, xx. p. 244 (1892), ♀.

*Plesia (Mesa) diapherogamia* Sauss.; Distant, Naturalist in the Transvaal, p. 225 (1892), ♀.

*Plesia (Mesa) disjuncta* Turn. Ann. & Mag. Nat. Hist. (8) i. p. 502 (1908), ♂.

*Elis (Mesa) ruficeps*, subsp. *atopogamia* and *diapherogamia* Turn. Ann. & Mag. Nat. Hist. (8) vii. p. 304 (1911), ♂ ♀.

*Hab.* Zanzibar; Nyasaland; Transvaal.

The colour-differences between *atopogamia* and *diapherogamia* are not constant, though in the former the mesonotum is usually red and in the latter black. The wings of the male are darker in specimens from Nyasaland than in those from the Transvaal. A single male received from Harar, in S. Abyssinia, has the wings entirely hyaline, slightly iridescent.

ELIS (MESA) HETEROGAMIA Sauss.

*Plesia (Mesa) heterogamia* Sauss. in Grandidier, Hist. Madagascar, xx. p. 244 (1892), ♀.

*Hab.* Delagoa Bay; Manica; South Nyasaland.

## ELIS (MESA) HOVA Turn.

*Plesia (Mesa) hova* Turn. Ann. & Mag. Nat. Hist. (8) i. p. 504 (1908), ♀.

*Hab.* Madagascar.

Probably the female of *nodosa* Guér.

## \*ELIS (MESA) ABDOMINALIS Guér.

*Plesia abdominalis* Guér. Rev. Zool. i. p. 57 (1838), ♀.

*Plesia (Mesa) abdominalis* Sauss. in Grandidier, Hist. Madagascar, xx. p. 244 (1892), ♀.

*Hab.* South Africa.

## ELIS (MESA) APICIPENNIS, sp. n.

♀. *Nigra*; *segmentis abdominalibus quarto apice, quinto sextoque rufo-ferrugineis; mandibulis basi antennisque ferrugineis, calcaribus albidis; alis fuscis, apice anguste hyalinis.*

*Long.* 10 mm.

♀. Clypeus finely punctured, broadly rounded at the apex. Head sparsely and rather finely punctured, shining, almost smooth round the anterior ocellus; interantennal prominence bilobed, divided by a longitudinal sulcus which does not reach the anterior ocellus. Scape shining, very sparsely punctured; flagellum opaque, the two basal joints shining. Posterior ocelli nearly as far from each other as from the eyes. Pronotum and pleuræ closely but not coarsely punctured; mesonotum and scutellum, more sparsely punctured; median segment opaque, finely punctured, the punctures more or less confluent longitudinally, the median groove shallow and not distinctly margined. Abdomen shining, finely and rather closely punctured, with a very short petiole, the first segment broadly truncate at the base; the sixth dorsal segment punctured, rounded at the apex. The sides of the median segment are closely obliquely striated. Third abscissa of the radius at least half as long again as the second; first recurrent nervure received just beyond the middle of the second cubital cell, second at two-thirds from the base of the third cubital cell. Radial cell not distinctly separated from the costa, narrowly rounded at the apex.

*Hab.* British East Africa, Makindu, 3300 ft. (*S. A. Neave*); April 5-7, 1911 (*A. E. R. C.*).

Nearly allied to *E. pyxidata* Turn. from N.E. Rhodesia, but differs in the broader shape of the third cubital cell, the position of the second recurrent nervure, the colour of the scape, of the wings, and of the fourth and fifth abdominal segments, in the finer and sparser puncturation and in the sculpture of the pygidium. The wings are clear hyaline beyond the radial and cubital cells. Basal joint of the posterior tarsi with a scopa of white hairs beneath; spur of the posterior tibiæ bent near the base.

## ELIS (MESA) TORRIDA Sm.

*Myzine torrida* Sm. Desc. new spec. Hymen. p. 178 (1879), ♀.

♀. *Nigra*; *mandibulis basi, scapo apice abdomineque toto ferrugineis; tegulis testaceis; tibiis tarsisque fusco-ferrugineis; alis hyalinis, venis nigris.*

*Long.* 12 mm.

♀. Clypeus short, transverse at the apex, subcarinate in the middle, finely punctured at the base, smooth at the apex, Front, pronotum, and mesopleuræ closely and strongly punctured, vertex a little more sparsely punctured; mesonotum and scutellum coarsely but sparsely punctured; pronotum as long as the scutellum. Median segment twice as broad as the length in the middle, not margined, almost smooth, but not shining; the median groove narrow but well defined, with the margins of the groove raised. Abdomen shining, with a few scattered punctures, the apical dorsal segment finely longitudinally striated. Basal joint of the posterior tarsi unarmed beneath, with a scopa of very fine hairs. Radial cell detached from the costa at the apex, third abscissa of the radius longer than the second, but a little shorter than the first, second recurrent nervure received just beyond two-thirds from the base of the third cubital cell.

*Hab.* Gambia (*ex coll. Shuckard*).

## \*ELIS (MESA) PERINGUEYI Sauss.

*Plesia (Mesa) peringueyi* Sauss. in Grandidier, Hist. Madagascar, xx. p. 245 (1892), ♀.

"Areola radialis apice minute truncata. Secunda v. recurr. in ipso medio margine tertiæ ar. cubitalis exserta. Metatarsus posticus subtus scopa spinarum brevium instructus. Majuscula, nigra, nitida, cinereo-hirta. Caput et thorax cribrosa. Caput validum, quam pronoto paulo latius. Metathorax læviusculus, superne tenuiter punctatus, subtiliter carinatus (carina a latere visa subbituberculata) utrinque pago polito; ejus facies postica plana, subrugulata; metapleura strigata. Epipygium elongato-trigonale, punctatum. Spinæ tib. post. nigræ, acutæ. Metatarsus posticus subtus pectinatus, pilis vel spinis albidis intermixtis, spinisque nonnullis dilatatis. Alæ bruneo-nebulosæ, venis fuscis; 2<sup>a</sup> ar. cubit. intus valde acuta; 2<sup>a</sup> vena recurrens transversalis, cum v. discoidali angulum fere rectum efficiens."

## \*ELIS (MESA) HOTTENTOTA Sauss.

*Plesia (Mesa) hottentota* Sauss. in Grandidier, Hist. Madagascar, xx. p. 245 (1892), ♀.

"Areola radialis apice minute truncata. Secunda v. recurr. in ipso medio margine tertiæ ar. cubitalis exserta. Metatarsus posticus subtus scopa spinarum brevium instructus. Minor, nigra, cinereo-hirta. Antennæ imo apice flavo. Caput et thorax sat tenuiter cribrosa. Caput quam thorax vix latius. Metathorax læviusculus, subtilissime punctato-rugulatus, superne

obsolete roundato-carinatus; facie postica punctulata, supra distincte angulata, obtusangula, fere rectangula. Epipygium trigonale, striolatum, margine lævi. Spinæ tib. post. albescentes, squamosæ. Alæ subhyalinæ venis bruneis et fuscis; parte apicali nebulosa, 2<sup>a</sup> ar. cubit. intus breviter acute producta; 2<sup>a</sup> vena recurrens arcuata, obliqua. In alis posticis v. discoidalis longius ultra venulam transverso-discoidalem furcata. Long 14 mill.; al. 10 mill. (Africa meridionalis)."

\*ELIS (MESA) CAPENSIS Lep.

*Tiphia capensis* Lep. in Hist. Nat. Insect., Hym. iii, p. 554 (1845), ♀.

"Caput nigrum, supra nigro, subtus rufo subvillosum. Antennæ nigrae, articulo primo nigro hirto. Thorax niger rufo subhirtus. Abdomen nigrum, subnudum. Pedes nigri, rufopallido subvillosi, femoribus duobus posticis angulatis compressisque. Alæ rufo-fusca, nervuris costaque rufo-fuscis; squama nigra, Cellula radialis clausa. Femina."

"Long. 7 lignes.

"Cap de Bonne Espérance. Musée de M. Serville."

The figure shows that this species is an *Elis*.

ELIS (MESA) INNOTATA Turn.

*Plesia (Mesa) innotata* Turn. Ann. & Mag. Nat. Hist. (8) i, p. 506 (1908), ♀.

*Hab.* Loangva River, N.E. Rhodesia; S. Nyasaland.

ELIS (MESA) SAUSSUREI Turn.

*Plesia (Mesa) saussurei* Turn. Trans. Ent. Soc. London, 1910, p. 394, ♀.

*Hab.* Madagascar.

This is near *E. xanthocera*, but the median segment is longer in proportion and much more distinctly margined; the colour of the antennæ is also different.

ELIS (MESA) XANTHOCERA Gerst.

*Myzine xanthocera* Gerst. Arch. f. Naturg. xxxvii, p. 353 (1870), ♀; v. d. Decken, Reise in Ost-Afrika, Gliedethiere, p. 339, pl. 14, fig. 5 (1873), ♀.

*Plesia (Mesa) xanthocera* Sauss. in Grandidier, Hist. Madagascar, xx, p. 245 (1892), ♀.

*Hab.* Howick, Natal; Zoutpansberg, Transvaal; Mozambique; Harar, Abyssinia.

ELIS (MESA) ERYTHROPODA Turn.

*Plesia (Mesa) erythropoda* Turn. Ann. & Mag. Nat. Hist. (8) i, p. 505 (1908), ♀.

*Hab.* Lake Ngami.

The scopa beneath the basal joint of the hind tarsus is rather

coarse at the base, but I do not think that any spines are present.

ELIS (MESA) INCERTA, sp. n.

♂. *Niger, cano-pilosus; clypeo macula mediana minuta, tibiis anticis supra pallide flavis; tegulis pedibusque fuscis; alis hyalinis, venis nigris; pygidio haud inciso.*

*Long.* 13 mm.

♂. Front coarsely reticulated, the vertex punctured; thorax closely but not coarsely punctured, median segment punctured-rugose, abdomen finely and closely punctured. Pronotum shorter than the scutellum, the anterior margins straight, the angles subacute. First abdominal segment petiolate, the narrow petiole scarcely more than half as long as the dilated apical portion of the segment, which is constricted at the apex; second segment twice as broad at the apex as at the base, all the segments slightly constricted at the base. Apical dorsal segment sparsely punctured, without an incision, somewhat convex, subcarinate in the middle, pointed at the apex, the lateral margins raised near the apex. Third abscissa of the radius a little longer than the second, which is fully twice as long as the fourth. First transverse cubital nervure oblique, sharply bent close to the cubitus, second recurrent nervure received just before one-third from the base of the third cubital cell, curved outwards below the middle, the ends slightly curved inwards.

*Hab.* Howick, Natal (*J. P. Cregoe*); Cape Colony.

This is very near the description of *Plesia carbonaria* Cam., but in that species the seventh dorsal segment is said to be shortly incised at the apex, and the fourth abscissa of the radius is almost as long as the second or third.

ELIS (MESA) CAPITATA Sm.

*Myzine capitata* Sm. Cat. Hym. B. M. iii. p. 74 (1855), ♂.

♂. *Niger, albido-pilosus; clypeo, mandibulis, linea obliqua utrinque supra antennis, pronoto fascia angusta postice, tegulis basi, segmento dorsali primo fascia apicali emarginata, segmentis dorsalibus et ventralibus 2-6 fascia bisinuata angusta flavis; pedibus flavis nigro-variegatis; alis hyalinis, venis testaceis.*

*Long.* 14-17 mm.

♂. Head large, much broader than the thorax, the cheeks more than half as broad as the eyes; antennæ stout, the apical joint truncate at the apex. Head rugose, thorax closely punctured, median segment punctured-rugose; abdomen shining, glossed with blue, very finely and closely punctured. Pronotum shorter than the scutellum, slightly narrowed anteriorly, the anterior margin straight, the angles not prominent, posterior margin widely arched. First abdominal segment petiolate, the petiole only about half as long as the rather strongly swollen apical

portion, the apex slightly constricted. Apical dorsal segment flattened, subcarinate in the middle, the lateral margins raised and nearly parallel, the apical incision subtriangular, not quite as deep as the apical width. Second and third abscissæ of the radius nearly equal in length; second recurrent nervure strongly curved outwards below the middle, joining the cubitus just before one-fourth from the base of the third cubital cell.

*Hab.* Johannesburg, Transvaal; Kroonstad.

The type is much damaged and without wings; the details of neururation are taken from a more recent specimen in which the cubitus of the hind wing on the right side is almost interstitial with the transverse median nervure, but is further removed towards the base on the left side.

ELIS (MESA) SPOLIATA, sp. n.

♂. *Niger*; mandibulis, clypeo macula parva nigra utrinque, linea utrinque supra antennis, pronoto angulis anticis et fascia postice, tegulis, segmento dorsali primo fascia angusta apicali, segmentis dorsalibus et ventralibus 2-6 fascia bisinuata angusta, coxis apice, femoribus posticis supra, tibiis anticis et intermediis supra tarsisque subtus pallide flavis; pedibus rufo-testaceis; alis hyalinis, venis nigris, stigmatibus rufo-testaceo.

*Long.* 13 mm.

♂. Clypeus short and broad, rather narrowly produced in the middle and very feebly emarginate at the apex. Eyes widely emarginate; cheeks very much narrower than the eyes; posterior ocelli more than half as far again from the eyes as from each other. Antennal tubercles well developed; antennæ longer than the head, thorax, and median segment combined, of even thickness throughout. Head punctured-rugose, much wider than the thorax; the whole thorax finely and closely punctured, with sparse white pubescence; pronotum a little longer in the middle than the scutellum, narrowed anteriorly, the anterior margin straight, posterior margin strongly arched. Median segment rounded posteriorly, not truncate, very closely but not coarsely punctured. Abdomen slender, slightly shining, very finely and sparsely punctured, petiolate; the petiole occupying the basal third of the first segment, the apical two-thirds elongate pyriform, the whole segment half as long again as the second, which is gradually broadened from the base, a little longer than the apical width; third segment broader than long. Apical dorsal segment slightly convex, subcarinate longitudinally in the middle, shining, with a few large punctures, the apical emargination almost as deep as its breadth at the apex. Radial cell pointed; second abscissa of the radius shorter than the third, but much longer than the first; second recurrent nervure received at one-third from the base of the third cubital cell.

*Hab.* Algoa Bay, Cape Colony; March (*Dr. Brauns*).

Nearly allied to *E. capitata* Sm., but in that species the head

is larger, the cheeks much broader, and the first abdominal segment a little shorter and more swollen towards the apex. The apical dorsal segment in *capitata* is flat, not convex, and has the sides distinctly raised into marginal carinae.

ELIS (MESA) LONGIVENTRIS, sp. n. (Pl. LXXXI. fig. 13 ; Pl. LXXXIII. fig. 11.)

♂. *Niger*: *mandibulis, clypeo, linea obliqua utrinque supra antennas, pronoto fascia angusta postice, segmento dorsali primo fascia angusta apicali, segmentis dorsalibus et ventralibus 2-6 fascia angusta apicali bisinuatâ, coxis subtus, tibiis tarsisque anterioribus supra, intermediisque subtus albido-flavis; alis hyalinis, venis nigris.*

*Long.* 10-13 mm.

♂. Very slender. Head rugose; thorax strongly and closely punctured, median segment punctured-rugose. Antennae rather slender, as long as the head, thorax, and median segment combined, of even thickness throughout. Pronotum longer than the scutellum, the sides almost parallel, the anterior margin straight, with acute angles, the posterior margin widely arched. Sides of the head and thorax rather thickly clothed with long white pubescence. Median segment longer than broad, rounded posteriorly. Abdomen slender, shining, very finely punctured; the basal segment as long as the second and third combined, petiolate, the narrow petiole nearly as long as the slightly swollen apical portion; second segment broadened from the base, about equal in length to the third, the segments scarcely constricted at the base; the apical dorsal segment convex, subcarinate in the middle, sparsely punctured, the punctures large, the apical incision shallow, not as deep as its breadth at the apex. Wings reaching to the apex of the fourth dorsal segment; second and third abscissæ of the radius usually about equal in length, the fourth distinctly shorter; second recurrent nervure received just before one-third from the base of the third cubital cell, curved outwards in the middle.

*Hab.* Willowmore, Cape Colony (*Dr. Brauns*).

This corresponds rather closely with the description of *Plesia incisa* Cam., but in that description the incision of the apical dorsal segment is said to be twice longer than wide, and some of the details of neurulation are not quite the same. But the latter character is of little importance in the genus, especially as to the length of the second and third abscissæ of the radius. Many variations occur which are not of specific value.

ELIS (MESA) ASMARENSIS TURN.

*Plesia asmarensis* Turn, Ann. & Mag. Nat. Hist. (8) iii, p. 481 (1909), ♂.

*Hab.* Erythraea.

## ELIS (MESA) AMETALLA Turn.

*Elis (Mesa) ametalla* Turn. Ann. & Mag. Nat. Hist. (8) vii.  
p. 305 (1911), ♂.

*Hab.* S. Nyasaland.

Almost certainly the male of *innotata*.

## ELIS (MESA) NODOSA Guér.

*Myzine nodosa* Guér. Dict. pitt. hist. nat. v. p. 584 (1837), ♂;  
Sauss. in Grandidier Hist. Madagascar, xx. p. 240 (1892), ♂.

*Hab.* Madagascar.

## \*ELIS (MESA) CLAVATA SAUSS.

*Myzine clavata* Sauss. in Grandidier, Hist. Madagascar, xx.  
p. 242 (1892), ♂.

*Hab.* Transvaal.

## \*ELIS (MESA) CARBONARIA Cam.

*Plesia carbonaria* Cam. Rec. Albany Mus. i, p. 317 (1905), ♂.

*Hab.* Dunbrody, Cape Colony.

## \*ELIS (MESA) RETICULATA Cam.

*Plesia reticulata* Cam. Rec. Albany Mus. i, p. 300 (1905), ♂.

*Hab.* Brak Kloof, Cape Colony.

## \*ELIS (MESA) RUFO-FEMORATA Cam.

*Plesia rufo-femorata* Cam. Rec. Albany Mus. i, p. 298 (1905), ♂.

*Hab.* O'okiep, Cape Colony.

## \*ELIS (MESA) INCISA Cam.

*Plesia incisa* Cam. Rec. Albany Mus. i, p. 320 (1905), ♂.

*Hab.* Dunbrody, Cape Colony.

Key to the Oriental Species of *Elis* (Mesa),

## Females.

- |  |    |                             |
|--|----|-----------------------------|
| 1. Sixth dorsal segment longitudinally striated .....  | 2. |                             |
| Sixth dorsal segment punctured.....  | 8. |                             |
| 2. Abdomen more or less ferruginous .....  | 3. |                             |
| Abdomen wholly black .....   | 4. |                             |
| 3. Clypeus with a median carina; two apical abdominal<br>segments and the apex of the fourth black.....    |    | <i>E. dimidiata</i> Guér.   |
| Clypeus without a distinct carina; apical abdominal<br>segment only black .....                            |    | <i>E. mandalensis</i> Magr. |
| 4. Median segment distinctly margined posteriorly .....  |    | <i>E. fuscipennis</i> Sm.   |
| Median segment not distinctly margined posteriorly...  | 5. |                             |
| 5. Wings fuscous .....   | 6. |                             |
| Wings subhyaline.....  | 7. |                             |
| 6. Pronotum longitudinally rugose; second abscissa of<br>the radius as long as the third. Length 16 mm.... |    | <i>E. mandibularis</i> Sm.  |
| Pronotum coarsely punctured; second abscissa of the<br>radius much shorter than the third. Length 10 mm.   |    | <i>E. petiolata</i> Sm.     |



7. Propleuræ sparsely punctured .....	<i>E. claripennis</i> Bingham.
Propleuræ finely striated .....	<i>E. ustulata</i> Turn.
8. Abdomen not marked with yellow .....	9.
Abdominal segments with yellow apical bands .....	* <i>E. picticollis</i> Mor.
9. Head black; abdomen black or black and ferruginous.	10.
Head red; abdomen steel-blue .....	<i>E. tricolor</i> Sm.
10. Abdomen mostly ferruginous .....	11.
Abdomen entirely black, or with the apical segment	
only ferruginous .....	12.
11. Four basal segments of the abdomen ferruginous .....	<i>E. bengalensis</i> Cam.
Four apical segments of the abdomen ferruginous .....	<i>E. apimacula</i> Cam.
12. Apical segment of the abdomen ferruginous .....	13.
Apical segment of the abdomen black .....	14.
13. Mesonotum closely punctured .....	* <i>E. fedtschenkoi</i> Sauss.
Mesonotum shining, almost impunctate .....	* <i>E. dubia</i> Mor.
14. Legs ferruginous; head coarsely and closely punctured.	<i>E. rothneyi</i> Cam.
Legs black; head sparsely punctured .....	<i>E. opacifrons</i> Turn.

*Myzine anthracina* recorded by Bingham as Indian is Australian and belongs to the genus *Anthobosca*; and *Myzine combusta* also recorded as Indian is undoubtedly West Indian, and a true *Elis*.

#### Males.

1. First dorsal segment elongate, petiolate, more or less nodose at the apex .....	2.
First dorsal segment subsessile, not nodose at the apex, broader at the apex than long .....	<i>E. dimidiaticornis</i>
2. Seventh dorsal segment distinctly incised at the apex; abdomen wholly black .....	[Bingham.]
Seventh dorsal segment not incised at the apex .....	3.
3. Legs black; seventh dorsal segment smooth and shining at the apex .....	4.
Legs fusco-ferruginous; seventh dorsal segment coarsely punctured .....	<i>E. burmanica</i> Bingham.
4. Abdomen wholly black, without yellow markings, sometimes glossed with blue .....	<i>E. lata</i> Bingham.
Abdomen more or less marked with yellow .....	5.
5. Median segment without a distinct sulcus; pygidial area clearly defined, with marginal carinae reaching nearly to the base of the segment .....	6.
Median segment with a distinct median sulcus; pygidial area less clearly defined, the marginal carinae lower and only on the apical third of the segment .....	<i>E. dimidiata</i> Guér.
6. First abdominal segment very little, if at all, longer than the hind femur and trochanter combined .....	<i>E. mandibularis</i> Sm.
First abdominal segment much longer than the hind femur and trochanter combined .....	7.
7. Head punctured-rugose; pronotum without a yellow band .....	8.
Head punctured; pronotum with a yellow band on the posterior margin .....	<i>E. nursei</i> Turn.
8. Wings hyaline; pronotum with a yellow band on the posterior margin, closely punctured .....	<i>E. mandalensis</i> Magr.
Wings pale fusco-hyaline; pronotum without a yellow band, rather sparsely punctured .....	9.
9. Narrow petiole of first abdominal segment scarcely more than half as long as the swollen apical portion of the segment .....	<i>E. extensa</i> Turn.
Narrow petiole of first abdominal segment nearly as long as the swollen apical portion of the segment ...	<i>E. petiolata</i> Sm.
	<i>E. claripennis</i> Bingham.

*Myzine pallida* Sm. and *Myzine orientalis* Sm., placed by Bingham and Smith in *Myzine*, together with many species of *Elis*,

belong to the genus *Iswara* Westw., which also belongs to the Elidinae.

ELIS (MESA) DIMIDIATA Guér.

*Myzine dimidiata* Guér. Dict. pitt. hist. nat. v. p. 584 (1837),

♂.

*Methoca orientalis* Sm. Cat. Hym. B. M. iii, p. 66 (1855), ♂  
(nec Smith, 1875).

*Myzine madraspatana* Sm. Cat. Hym. B. M. iii, p. 72 (1855), ♀.

*Myzine violaceipennis* Cam. Mem. Manchester Lit. & Phil. Soc.  
xlii, p. 21 (1898), ♀.

*Hab.* The whole of India, except the North-West.

♀. Head and thorax coarsely rugosely punctured, smooth round the anterior ocellus and at the base of the mesonotum; median segment opaque, with a narrow median sulcus in which is a low carina, the sides of the sulcus raised and forming low carinae, the segment not margined at the base of the posterior truncation. Radial cell distinctly separated from the costa for more than half its length, third abscissa of the radius very distinctly longer than the second. Sixth dorsal segment finely longitudinally striated; basal joint of hind tarsi with a scopula of short hairs beneath.

Black; second, third, and the base of the fourth abdominal segments ferruginous. Calcaria whitish; wings fusco-violaceous.

♂. Head and thorax closely punctured; median segment rugose; basal third of first abdominal segment forming a narrow petiole, apical two-thirds swollen and slightly constricted at the apex, the whole segment more than half as long again as the second segment. Abdomen shining, very finely punctured; pygidial area coarsely punctured, fully twice as long as broad, the sides raised and forming carinae, a well-defined median carina, the apex narrowly truncate, not emarginate.

Black; the abdomen slightly glossed with blue; base of the mandibles, fore tibiae in front, fore tarsi in front, base of the tegulae and the hind margin of the pronotum narrowly and obscurely pale yellow. Wings hyaline at the base, fusco-hyaline beyond the basal nervure.

Length 17 mm.

The association of the sexes was suggested by me in 1908, and positive proof was published by Mr. Lefroy a year later, a pair having been taken *in coitu* by Mr. Dutt at Pusa.

ELIS (MESA) MANDIBULARIS Sm.

*Methoca mandibularis* Sm. Trans. Ent. Soc. London, p. 301 (1869), ♂.

*Plesia (Mesa) mandibularis* Turn. Ann. & Mag. Nat. Hist. (8) i. p. 509 (1908), ♂.

*Plesia (Mesa) purpureipennis* Turn. Ann. & Mag. Nat. Hist. (8) i. p. 508 (1908), ♀.

This will almost certainly prove to be the Chinese subspecies

of *E. dimidiata* Guér., from which the female differs in the entirely black abdomen and the greater length of the second abscissa of the radius, which is nearly as long as the third. The male differs from *dimidiata* in having the second abscissa of the radius very distinctly longer than the third, in the paler colour of the apical portion of the wings, in the presence of a distinct longitudinal sulcus on the median segment, and in the somewhat shorter and broader form of the first abdominal segment. The pygidial area of the male is also wider and less distinctly margined than in *dimidiata*.

*Hab.* Shanghai.

ELIS (MESA) BENGALENSIS Cam.

*Myzine bengalensis* Cam. Mem. Manchester Lit. & Phil. Soc. xlii. p. 21, (1898), ♀.

The four basal abdominal segments are ferruginous; the wings violaceous, the base of the hind wings hyaline. Pronotum sparsely but coarsely punctured.

Length 15 mm.

This is quite distinct from *dimidiata*, and seems, as Cameron suggests, to be more nearly related to *mandalensis*.

ELIS (MESA) MANDALENSIS Magr.

*Plesia mandalensis* Magr. Ann. Mus. Civ. Gen. (2) xii. p. 257 (1892), ♀.

♀. The five basal abdominal segments are ferruginous. Calcaria and spines of the hind tibiæ whitish. Wings hyaline, dark fusco-hyaline beyond the basal nervure of the fore wing to the apex, the apex of the hind wing fusco-hyaline. Pronotum closely and somewhat coarsely punctured; sixth dorsal segment finely longitudinally striated.

♂. Head and thorax closely and rather finely punctured; median segment punctured-rugose; abdomen shining, microscopically punctured. First abdominal segment scarcely longer than the hind femur and trochanter combined, the narrow petiole a little more than half as long as the moderately swollen apical portion of the segment; second segment longer than the third by about one-quarter. Seventh dorsal segment pointed, not incised; pygidial area well defined, very narrow, coarsely punctured and with a well-marked median carina. Third abscissa of the radius distinctly longer than the second.

Black; mandibles at the base, clypeus, apex of the interantennal prominence, posterior margin of the pronotum, tegulae, an apical band on dorsal segments 1-6, strongly bisinuate on segments 2-6 and on ventral segments 2-6, tarsi, fore and intermediate tibiæ in front, and the base of the hind tibiæ yellow. Wings hyaline, nervures fuscous.

Length, ♀ 10 mm., ♂ 10-11 mm.

*Hab.* Mandalay, Burma.

Taken *in copulâ* by Colonel Bingham.

## ELIS (MESA) ROTHNEYI Cam.

*Myzine rothneyi* Cam. Ann. & Mag. Nat. Hist. (7) x. p. 88 (1902), ♀.

♀. This fine species is easily distinguished, being black with ferruginous legs; the wings fusco-hyaline, flushed with purple. The sixth dorsal segment is coarsely punctured, the punctures tending to become confluent longitudinally towards the apex. Head and thorax very coarsely punctured, rugose on the pronotum.

*Hab.* Khasi Hills, Assam.

## ELIS (MESA) FUSCIPENNIS Sm.

*Myzine fuscipennis* Sm. Cat. Hym. B. M. iii. p. 72 (1855), ♀; Bingham. Fauna Brit. India, Hymen. i. p. 67 (1897), ♀.

♀. This species may be distinguished from the female of *petiolata* Sm., which it closely resembles, by the sharply margined median segment, the posterior slope of which is abrupt and steep, not gradual as in *petiolata*. The colour is black; the calcaria whitish, mandibles fusco-ferruginous, wings fuscous. The spines on the outer margin of the hind tibiæ are black in *fuscipennis*, whitish in *petiolata*.

Length 12 mm.

*Hab.* India.

The type is unique in the British Museum collection and was obtained from Shuckard in exchange, so that the locality is uncertain. Bingham's description is taken from the type, but he evidently confused the species with *petiolata*, a specimen of which is labelled *fuscipennis* by him in the British Museum collection. I have not seen the specimens he records from Burma, but consider it very doubtful if they belong to this species.

## ELIS (MESA) PETIOLATA Sm.

*Myzine petiolata* Sm. Cat. Hym. B. M. iii. p. 72 (1855), ♂.

*Myzine ceylonica* Cam. Ann. & Mag. Nat. Hist. (7) v. p. 18 (1900), ♀.

*Plesia (Mesa) petiolata* Turn. Ann. & Mag. Nat. Hist. (8) i. p. 512 (1908), ♂ ♀.

♀. Differs from *fuscipennis* Sm. in the absence of a distinct margin separating the dorsal surface of the median segment from the surface of the posterior slope and in the white spines of the hind tibiæ. From *claripennis* Bingham it differs in the fuscous colour of the wings, the somewhat coarser puncturation, and the lesser length of the second abscissa of the radius, which is only about half as long as the third in *petiolata* and almost or quite as long as the third in *claripennis*. In *fuscipennis* the second abscissa of the radius is shorter than in *petiolata*, being distinctly less than half as long as the third.

♂. This is very near the male of *claripennis*, but may be distinguished by the less elongate petiole, the narrow basal portion of which is scarcely more than half as long as the moderately swollen apical portion of the segment.

Length, ♂ ♀, 10 mm.

*Hab.* Bengal, Bombay, and Ceylon.

ELIS (MESA) CLARIPENNIS Bingham.

*Myzine claripennis* Bingham. Fauna Brit. India, Hymen. i. p. 68 (1897), ♀.

*Myzine hortata* Nurse, Journ. Bombay Nat. Hist. Soc. xiv. p. 81 (1902), ♀.

♀. Differs from *petiolata* as noticed under that species. Bingham's description of the species is inaccurate as to the median segment, and this has misled Nurse. The segment is not smooth and shining, and the longitudinal impression, though not very long, cannot be said to be triangular.

♂. The male, which has not been previously described, closely resembles *petiolata* Sm. Head and thorax closely punctured, most coarsely on the front, median segment rugose; abdomen very slender, shining, minutely punctured. First abdominal segment more than half as long again as the hind femur, the narrow petiole very little shorter than the feebly swollen apical portion; second segment very narrow at the base, nearly half as long again as the third segment. Seventh dorsal segment not incised at the apex, pointed, convex and without a distinct pygidial area.

Black; mandibles, clypeus, the apex of the interantennal prominence, posterior margin of the pronotum, an apical narrow band on dorsal segments 1-6, strongly bisinuate on segments 2-6, base of the tegulae, fore tarsi, anterior and intermediate tibiae in front, base of hind tibiae and base of intermediate and hind tarsi pale yellow. Wings hyaline, nervures fuscous.

Length, ♂ 8 mm., ♀ 10 mm.

*Hab.* Burma, Ceylon, Bengal, and Deesa.

The male has the two basal abdominal segments more slender than in *petiolata*, the first with the apical portion less swollen, the basal narrow petiole longer in proportion; the second narrower at the base.

ELIS (MESA) USTULATA Turner.

*Plesia (Mesa) ustulata* Turn. Ann. & Mag. Nat. Hist. (8) i. p. 510 (1908), ♀.

♀. This is nearest to *claripennis* Bingham, but is a larger and more robust species, somewhat more closely punctured, with the wings distinctly darker and the punctures on the abdomen larger.

*Hab.* Yuinzalin Valley, Tenasserim.

## ELIS (MESA) OPACIFRONS Turn.

*Plesia (Mesa) opacifrons* Turn. Ann. & Mag. Nat. Hist. (8) i. p. 509 (1908), ♀.

♀. This black species may be distinguished by the very sparse puncturation of the head, pronotum, and sixth dorsal segment. The wings are pale fusco-hyaline. It is a larger and more robust species than *petiolata*.

*Hab.* Salwen Valley, Tenasserim.

## \*ELIS (MESA) DUBIA Mor.

*Plesia dubia* Mor. Hor. Soc. Ent. Ross. xxiv. p. 627 (1890), ♀.

This species is black, with the apical abdominal segment, tarsi, hind tibiæ, mandibles, and antennæ beneath ferruginous, the mesonotum shining and almost impunctate, the sixth dorsal segment finely and closely punctured.

Length  $11\frac{1}{2}$  mm.

*Hab.* Turkestan.

## PLESIA (MESA) APIMACULA Cam.

*Myzine apimacula* Cam. Journ. Bombay Nat. Hist. Soc. xiv. p. 272 (1902), ♀.

♀. This is allied to *dubia* Mor., but differs in having the four apical abdominal segments ferruginous, the wings paler, and the puncturation somewhat different.

*Hab.* Deesa, N.W. India.

The male described as belonging to this species by Colonel Nurse is *Pecilotiphia albomaculata* Cam., but has three cubital cells instead of two as in the type of the species, which is evidently an aberration from the usual neuration. The male has the form of a *Myzine*, not of a *Mesa*, but it is by no means improbable that Nurse is correct in the association of the sexes, though he informs me that he does not recollect his reasons for placing them together. The apical dorsal segment is deeply incised as in *Myzine*. Cameron's action in forming a new genus on a specimen with abnormal neuration is quite unjustified and due to ignorance of the variable character of neuration in the Scoliidae, but I am at present doubtful if *Pecilotiphia* should be treated as a synonym of *Myzine* or of *Elis (Mesa)*.

## \*ELIS (MESA) FEDTSCHENKOI Sauss.

*Plesia fedtschenkoi* Saussure in Fedtschenko: Turkestan, Scoliidae, p. 29 (1880), ♀ (*Plesia tartara* on plate).

*Plesia tartara* Sauss. l. c. pl. ii. fig. 12, ♀.

This seems to differ from *dubia* Mor. in the coarser and closer puncturation of the mesonotum. The name *tartara* is used on the plate through a fault in the editing, and has unfortunately been recorded in Dalla Torre's Catalogue as a distinct species.

## \*ELIS (MESA) PICTICOLLIS Mor.

*Plesia picticollis* Mor. Hor. Soc. Ent. Ross. xxiv. p. 624 (1890), ♀.

This appears to be a very distinct species, strongly marked with yellow on the head, thorax, and abdomen. The colour would suggest an *Anthobosca* allied to *A. arabica* Turn., but the structure of the apical abdominal segment and the indistinct striation of the metapleuræ render it unlikely that it belongs to that genus.

ELIS (MESA) TRICOLOR Sm. (Pl. LXXXI. fig. 16; Pl. LXXXII. fig. 11.)

*Myzine tricolor* Sm. Journ. Linn. Soc., Zool. ii. p. 91 (1858), ♀.

This fine species is easily distinguished by the large size (19 mm.), the bright red head, and steel-blue abdomen. The wings are fusco-hyaline, flushed with purple, almost hyaline at the base. The head is large, quadrate, sparsely punctured, smooth on the vertex; pronotum coarsely punctured, median segment subconcave on the posterior slope; sixth dorsal segment strongly punctured. Second abscissa of the radius nearly as long as the first and third combined.

*Hab.* Borneo (typical); Dibrugarh, Assam; W. India (*T. R. Bell*).

The only specimen I have seen from Assam has the head distinctly longer than broad, longer behind the eyes than in the typical form, and the scape and three basal joints of the flagellum are red; the median segment is not at all concave on the posterior slope. The differences will probably prove to be subspecific. Mr. Bell informed me that he bred this species from the larva of a longicorn beetle.

ELIS (MESA) ? DIMIDIATICORNIS Bingham. (Pl. LXXXI. fig. 15.)

*Myzine dimidiaticornis* Bingham. Journ. Linn. Soc., Zool. xxv. p. 423 (1896), ♂; Turn. Ann. & Mag. Nat. Hist. (8) i. p. 501 (1908), ♂.

♂. Antennæ stout, a little longer than the thorax and median segment combined. Front rugose, vertex sparsely punctured. Pronotum transversely rugulose, much longer than the mesonotum, the sides almost parallel. Head slightly narrowed and produced from behind the eyes. Thorax and median segment rugose, the median segment distinctly margined posteriorly and vertically truncate. First abdominal segment vertically truncate anteriorly, with a distinct transverse carina above the base of the truncation, attached to the abdomen by a very short petiole, nearly as broad as the second segment, the sides parallel. Apical dorsal segment not incised at the apex. Without a pygidial area. Second abscissa of the radius as long as the first and third combined.

Black; scape and four basal joints of the flagellum, clypeus, and apex of the interantennal prominence dull ferruginous; abdomen glossed with steely blue. Wings hyaline; fusco-

violaceous from the basal nervure of the fore wing to the apex and at the apex of the hind wing.

Length 13 mm.

*Hab.* Kumaon, N.W. India.

Although this resembles *Myzine* rather than *Elis* in the form of the first abdominal segment and the antennæ, I consider that it will probably be found to be the male of *E. tricolor* Sm. The proportions of the cubital cells, the colour of the abdomen and antennæ, and the colour of the wings are all very similar in the two forms and unlike any other species, either of *Myzine* or *Elis*. I consider it probable that the group of *Elis* containing *dubia*, *fedtschenkoi*, and *apimacula* will also be found to have males showing the facies of *Myzine* rather than of *Elis*. These cases render it very difficult to reach absolute certainty in distinguishing the males of *Elis* from *Myzine*, though all males with a long petiole may be assigned to *Elis*.

I think *Methoca rugosa* Cam. (Mem. Manchester Soc. 1896) from Ceylon will prove to be a local form of this species, and also an individual aberration as far as the loss of one of the transverse cubital nervures is concerned. It is certainly not a *Methoca*.

ELIS (MESA) NURSEI Turn.

*Plesia nursei* Turn. Ann. & Mag. Nat. Hist. (8) iii. p. 480 (1909), ♂.

The first abdominal segment is no longer than the hind femur and trochanter combined, the narrowed petiole being rather less than half as long as the strongly dilated apical portion of the segment. In general appearance there is a strong resemblance to *petiolata*, but there is no yellow band on the pronotum and sixth abdominal segment. It is also a larger species, and the shorter petiole is a good distinguishing character, in which the resemblance is nearer to *mandalensis* than to *petiolata*.

*Hab.* Simla.

ELIS (MESA) EXTENSA Turn.

*Plesia (Mesa) extensa* Turn. Ann. & Mag. Nat. Hist. (8) i. p. 511 (1908), ♂.

The first abdominal segment is much longer than the hind femur and trochanter combined; the antennæ are longer than the head, thorax, and median segment combined. The wings are strongly suffused with yellowish brown, and the yellow bands on the abdomen are reduced to short transverse lines on each side of dorsal segments 2-5.

Length 12 mm.

*Hab.* Upper Burma.

ELIS (MESA) LÆTA Bingh.

*Myzine læta* Bingh. Faun. Brit. India, Hymen. i. p. 70 (1897), ♂.

♂. Black; the legs fusco-ferruginous; wings hyaline. First



abdominal segment a little longer than the hind femur and trochanter combined, the narrow petiole about half as long as the dilated apical portion; seventh dorsal segment distinctly incised at the apex, the incision nearly as deep as its apical width; second segment about half as long again as the third. Second abscissa of the radius distinctly longer than the third. Pygidial area clearly defined and strongly punctured. Hind tibiae more distinctly serrate than in other species of the genus.

Length 9–11 mm.

*Hab.* Moulmein, Tenasserim.

ELIS (MESA) BURMANICA Bing.

*Myzine burmanica* Bing. Faun. Brit. India, Hymen. i. p. 70 (1897), ♂.

♂. This differs from *leta* in the black colour of the legs; the pygidial area is flatter, less distinctly punctured, and not distinctly margined, and the third abscissa of the radius is distinctly longer than the second. Whether these differences are of specific value or not it is not easy to say from a single specimen of each, but I am inclined to regard them as merely variations of one species.

*Hab.* Amherst, Tenasserim.

ELIS SELLOWI, sp. n.

♀. *Nigra*; *postscutello linea transversa, segmento dorsali primo macula magna utrinque, segmentisque dorsalibus 2–5 fascia basali angusta utrinque flavis; femoribus, tibiis tarsisque rufo-testaceis; mandibulis fusco-ferrugineis; alis fusco-hyalinis, costa obscura, venis fuscis.*

Long. 11–13 mm.

♀. Clypeus strongly punctured, broadly rounded at the apex, with a longitudinal carina from the base almost reaching the apex. Front strongly and closely punctured, vertex and ocellar region sparsely and less deeply punctured, cheeks smooth, an arched impressed mark above the posterior ocelli; scape strongly punctured. Thorax deeply and closely punctured, especially on the pronotum and mesopleuræ, the disc of the mesonotum and the scutellum rather sparsely punctured; propleuræ obliquely striated. Median segment closely punctured in the middle, opaque and almost smooth near the anterior angles; the posterior slope almost vertical, concave in the middle and shagreened, with short transverse striæ on the sides, the sides of the segment strongly striated. Abdomen shining, with a few scattered punctures; the apical segment closely longitudinally striated, with a few large punctures between the striæ, very broadly rounded at the apex. The three abscissæ of the radius almost equal in length; first recurrent nervure received just beyond the middle of the second cubital cell, second just beyond one-quarter from the base of the third cubital cell. The ventral abdominal

segments are very sparsely punctured, with a row of piliferous punctures near the apex; the pubescence is whitish.

*Hab.* San Juan del Rey, Brazil (*Sellow*). Two specimens.

Type in the Berlin Museum.

ELIS MAJOR, sp. n.

♀. *Nigra*; fascia angusta transversa supra antennis, margine interiore oculorum anguste, linea pone oculos, postscutello, segmentis dorsalibus primo secundoque macula magna obliqua utrinque, segmentisque 3-5 fascia lata sub-basali flavis; mandibulis, tibiis tarsisque fuscis; alis flavo-hyalinis, venis testaceis.

Long. 24 mm.

♀. Clypeus coarsely punctured, broadly rounded at the apex, raised and longitudinally carinate in the middle. Front coarsely punctured, the prominence between the antennæ almost transverse at the apex, vertex and ocellar region a little more sparsely punctured, cheeks very sparsely and more finely punctured; posterior ocelli nearly twice as far from the eyes as from each other. Thorax closely and coarsely punctured, especially on the pronotum and mesopleuræ; propleuræ finely obliquely striated. Median segment smooth, opaque, rugosely punctured in the middle, with a few irregular transverse striæ at the apex and also on the sides of the posterior truncation; the sides of the segment striated, with a small yellow band near the apical angle. Abdomen shining, with a few scattered punctures, the apical segment closely longitudinally striated and broadly rounded at the apex. Ventral segments smooth, more or less punctured at the apex. First and third abscissæ of the radius about equal in length, the second nearly half as long again. First recurrent nervure received beyond the middle, sometimes at two-thirds from the base of the second cubital cell, second received between the middle and one-quarter from the base of the third cubital cell. Calcaria whitish.

*Hab.* Central Brazil (*Sellow*).

Described from three specimens in the Berlin Museum.

The probable male of this species has the usual yellow markings: the mandibles, clypeus, a small spot on each side above the base of the antennæ, the margins of the pronotum, interrupted in the middle on the anterior margin, the tegulæ, a spot on the mesonotum, one on the centre of the scutellum, a large spot on the mesopleuræ below the anterior wings and another before the intermediate coxæ, the postscutellum, a lateral longitudinal band on each side of the posterior slope of the median segment, apical bands on dorsal segments 1-6, straight and narrow on segments 4-6, broader and shallowly emarginate on segments 2-3 and very deeply emarginate on the first segment, the tibiæ, tarsi, and the greater part of the femora yellow. No yellow spots on the apical segment. Wings hyaline, nervures black. Emargination of the apical segment broader at the apex than deep, the dorsal surface

of the segment flattened and distinctly margined laterally, shallowly longitudinally depressed in the middle and sparsely punctured; the basal segment distinctly less than twice as long as the breadth at the apex. Clypeus broadly rounded or subtruncate at the apex, not emarginate. Second recurrent nervure received at the base of the third cubital cell, almost interstitial with the second transverse cubital nervure; third abscissa of the radius a little longer than the second. Pronotum slightly emarginate anteriorly.

Length 19 mm.

The details of neuration in the Elidinae are not reliable for specific differences, often showing slight differences on the opposite sides of the same insect. The really important distinctions in the males of *Elis* are to be found in the structure of the apical and basal segments of the abdomen.

*ELIS COMBUSTA* Sm. (Pl. LXXXII. fig. 12.)

*Myzine combusta* Sm. Descr. new spec. Hymen. p. 179 (1879), ♀; Bingham, Faun. Brit. Ind., Hymen. i. p. 67 (1897), ♀.

The type is from Shuckard's collection. I do not know why Smith gave the locality as India or Africa, nor why Colonel Bingham included it in the Fauna of India without any note of doubt. The structure is that of the true American section of *Elis*, and I look on it as a mere colour-variety, or possibly a local race confined to one island, of *E. ephippium* Fabr., a West Indian species which I have recorded from St. Thomas, St. John, Antigua, and Porto Rico.

#### Subfamily ANTHOBOSCINÆ.

#### Genus ANTHOBOSCA Guér.

*Anthobosca* Guér. Voy. 'Coquille,' Zool. ii. p. 214 (1839).

*Cosila* Guér. Voy. 'Coquille,' Zool. ii. p. 249 (1839).

*Dimorphoptera* Sm. Trans. Ent. Soc. London, p. 238 (1868).

*Myzine* Burm. Stett. ent. Zeit. xxxvii. p. 168 (1876) (nec Latreille).

*Odontothymus* Cam. Rec. Albany Mus. i. p. 161 (1904).

*Austrotiphia* Cockerell, Bull. Mus. Comp. Anat. Harvard, p. 49 (1906).

*Geotiphia* Cockerell, Bull. Mus. Comp. Anat. Harvard, p. 49 (1906).

*Anthobosca* Turn. Proc. Linn. Soc. N.S.W. xxxii. p. 514 (1907).

There has been so much confusion in connection with this interesting genus that I think it may be useful to give a short account of the species, which may serve as a basis for a future monograph. Owing to the great differences between the sexes, they were for a long time placed in different families, most of the

males being placed in *Anthobosca* in the Thynnidæ, and the females in *Cosila* among the Scoliidæ. Guérin used both names in the same work, but although he placed *Cosila chilensis* correctly, with the Scoliidæ, he failed to see the relationship to *Anthobosca australasiæ* which he had described in an earlier portion of the same work and classed with the Thynnidæ. Smith in 1868 placed a single male in his genus *Dimorphoptera*, which is a synonym of *Cosila*, but both before and after placed other males in *Anthobosca* among the Thynnidæ. He also described both sexes of *A. albomaculata* Sm., which were taken coupled by Bates, as *Myzine*, but this work was published after his death and without his revision. Burmeister also in 1876 correctly associated the sexes, but placed his species in *Myzine*. Although three or four males had been correctly associated with the females, they do not appear to have been connected in any way with the males described in the genus *Anthobosca* till my revision of the Australian species of the genus appeared in 1907. The best work on the genus was done by Saussure in 1892; but he treated the males as unknown, except in the case of *chilensis*, and did not connect *Cosila* with *Anthobosca*. In Dalla Torre's great Catalogue, published in 1897, there is much confusion in regard to this genus, species appearing under the genera *Thynnus*, *Myzine*, and *Cosila*. There is much confusion over the genus in the recent papers of Cameron on South African Hymenoptera. Ashmead treats the group as a family, Cosilidæ, not as a subfamily of the Scoliidæ, which I consider the more natural course. But he places *Anthobosca* in the Thynnidæ and *Dimorphoptera* in his family Myzinidæ. He includes in his family Cosilidæ several genera of doubtful affinities, of which, in my opinion, *Nursea* should be treated as an aberrant genus of the Sphecoidea, whilst *Maurillus* belongs to the Pompilidæ. The position of *Sierolomorpha* and *Dicrogenium* seems to me very doubtful, but I have not seen specimens. I am compelled to look on *Anthobosca* as the only genus which can be placed in the subfamily Anthoboscinae with any certainty. Ashmead states that the intermediate coxæ in his Cosilidæ are contiguous or nearly so; but this is quite incorrect as to the females, and even in the males the separation is quite distinct. In my key to the species I have included several species which I have not seen, one or two of which may possibly not belong to the genus.

The females are distinguished from other Scoliidæ by the absence of a deep groove between the two basal ventral segments of the abdomen. The hind coxæ are separated as in *Tiphia*, not contiguous as in *Elis*; but the intermediate coxæ are less widely separated than in either of those groups, though very little less so than in *Elis*. The males are distinguished from all other Scoliidæ by the unarmed rounded hypopygium—in this character approaching most nearly to the Thynnidæ of the genus *Eirone*.

It is quite possible that the genus will have to be subdivided owing to differences of structure, especially in the tarsal ungues, which in most of the Australian species have a blunt lobe at the base, but in the African, South American, and a few Australian species are bifid. The neuration is so variable, even in the same species, that I do not consider that genera should be founded on the shape of the radial cell alone, on which character the subgenera *Colobosila* Sichel and *Callosila* Saussure have been based. In two Australian species the cell is acute at the apex, in others blunt, and African species may similarly be divided into two groups. But until more species are known in both sexes any subdivision would be rash and unnecessary.

The geographical distribution of the genus is interesting, being almost entirely Southern, including Australia (where the species are most numerous), South America as far north as the Amazon, Madagascar and South Africa spreading up the East African coast to Suakin and crossing to Aden. I am aware that many regard similar cases of distribution as a proof of southern origin, and explain them by former northern extensions of the Southern continent connecting at different times with southern extensions of the land in the Southern Hemisphere. But taking into consideration the enormous depth of the Southern oceans I cannot look on this explanation as satisfactory, and think that it is more reasonable to look on this and other similar cases of distribution as instances of the survival in the south of genera which in former times had a much more extensive range. It has been pointed out by Darwin that the struggle for existence is more severe on large land-areas than on smaller ones, owing to the more complex conditions of life from the larger number of existing species which are able to come into competition. Now the land-areas in the south are very much smaller than in the north, so that it is reasonable to suppose that many genera may have been able to survive in the south with little or no modification, which have been exterminated by the more severe struggle for existence in the north. In this case we should expect to find fossil remains of such genera, or at all events of nearly related forms, in the north; and in a great number of cases such fossils have been found. In the present genus I look on Cockerell's *Geotiphia* found fossil in Colorado as absolutely congeneric with existing South-American species; and the plant genus *Araucaria* and many others, which are now southern, had in early geological times a wide range in the Northern Hemisphere. It may, of course, be argued that such genera originally had their home in the south and at one time extended their range northward, but in that case it may be conceded that they may have reached the different portions of the Southern Hemisphere by way of the north and not from a southern continent. I must own to an objection to calling up continents from the extreme ocean depths "*nisi dignus vindice nodus.*"

*Key to the Species of Anthobosca.**Females.*

- |   |     |                                |
|---|-----|--------------------------------|
| 1. Species from the Old World.....  | 2.  |                                |
| South-American species .....  | 23. |                                |
| 2. Australian species .....   | 3.  |                                |
| African and Arabian species .....   | 16. |                                |
| 3. Tarsal unguis with a lobe at the base either rounded<br>or pointed.....  | 4.  |                                |
| Tarsal unguis without a basal lobe, deeply bifid .....  | 14. |                                |
| 4. Radial cell pointed at the apex .....  | 5.  |                                |
| Radial cell blunt at the apex .....   | 6.  |                                |
| 5. Pubescence black, calcaria black, abdomen wholly<br>black .....  |     | <i>A. australis</i> Sichel.    |
| Pubescence whitish, calcaria white, abdomen usually<br>with a yellow spot on each side of the third dorsal<br>segment .....   |     | <i>A. signata</i> Sm.          |
| 6. Wings short, the length of the costa of the fore wing<br>not exceeding two and a half times the breadth of<br>the mesonotum. Pronotum, median segment, and<br>three basal abdominal segments rufo-testaceous ... |     | <i>A. fastuosa</i> Sm.         |
| Wings longer, the length of the costa of the fore<br>wing three times as great as the breadth of the<br>mesonotum. Thorax and abdomen black .....   | 7.  |                                |
| 7. Antennæ orange; stigma about three times as long<br>on the costa as broad .....  |     | <i>A. flavicornis</i> Sauss.   |
| Antennæ black or fuscous; stigma scarcely more<br>than twice as long on the costa as broad .....  | 8.  |                                |
| 8. Legs bright ferruginous .....  | 9.  |                                |
| Legs black, sometimes fusco-ferruginous beneath ...   | 10. |                                |
| 9. Second abscissa of the radius no longer than the<br>third; first recurrent nervure received just before<br>the middle of the second cubital cell .....   |     | <i>A. cognata</i> Sm.          |
| Second abscissa of the radius longer than the third;<br>first recurrent nervure received at one-quarter from<br>the base of the second cubital cell .....   |     | <i>A. strandi</i> Turn.        |
| 10. Wings fuscous; four basal abdominal segments with<br>ciliæ of white scale-like hairs .....  | 11. |                                |
| Wings hyaline or subhyaline; abdominal segments<br>without ciliæ of scale-like hairs .....  | 12. |                                |
| 11. Pronotum and scutellum strongly punctured .....   |     | <i>A. albopilosa</i> Turn.     |
| Pronotum and scutellum sparsely and very finely<br>punctured .....  |     | <i>A. argenteocincta</i> Grib. |
| 12. Third cubital cell nearly as long on the radius as on<br>the cubitus or longer; first recurrent nervure<br>received slightly beyond the middle of the second<br>cubital cell .....                              |     | <i>A. anthracina</i> Sm.       |
| Third cubital cell much shorter on the radius than<br>on the cubitus; first recurrent nervure received<br>well before the middle of the second cubital cell ...   | 13. |                                |
| 13. Front punctured; legs wholly black; length 11 mm.<br>Front smooth and shining; legs fusco-ferruginous<br>beneath; length 7 mm.....  |     | <i>A. unicolor</i> Sm.         |
|   |     | <i>A. lævifrons</i> Sm.        |
| 14. Abdomen black; second and third cubital cells each<br>receiving a recurrent nervure .....   | 15. |                                |
| Abdominal segments 2-4 very broadly rufo-testaceous<br>at the base; second cubital cell receiving both<br>recurrent nervures .....  |     | <i>A. clypeata</i> Sm.         |
| 15. Sixth dorsal segment strongly striated at the base;<br>radial cell detached from costa for half its length .<br>Sixth dorsal segment punctured; radial cell detached<br>from costa at extreme apex only .....   |     | <i>A. nubilipennis</i> Turn.   |
|   |     | <i>A. occipitalis</i> Turn.    |
| 16. Radial cell subacute at apex; abdomen not marked<br>with yellowish white.....   | 17. |                                |
| Radial cell broadly rounded or narrowly truncate at<br>apex; abdomen marked with yellowish white .....  | 20. |                                |

17. Apical segment at least of abdomen red; wings fusco-violaceous ..... 18.  
 Abdomen wholly black; wings flavo- or fusco-hyaline. .... 19.
18. Apical abdominal segment only red; thorax not coarsely punctured ..... \**A. melanaria* Cam.  
 Two apical abdominal segments red; thorax very coarsely sculptured ..... \**A. donaldsoni* Fox.
19. Wings flavo-hyaline; third transverse cubital nervure received close to the apex of the radial cell ..... *A. insularis* Sm.  
 Wings fusco-hyaline; fourth abscissa of the radius as long as the first ..... *A. natalica* Turn.  
*A. minima* Turn.
20. Radial cell narrowly truncate at apex. Length 5 mm. .... 21.  
 Radial cell broadly rounded at apex. Length 9 mm. or more ..... 22.
21. Head and thorax black with pale yellow markings ...  
 Head and thorax without yellow markings, thorax black or more or less red ..... *A. erythronota* Cam.  
 22. Abdomen ferruginous ..... \**A. sauakinensis* Magr.  
 Abdomen black ..... *A. arabica* Turn.
23. Abdomen black without markings ..... 24.  
 Abdomen marked with yellow or white ..... 25.
24. Antennæ orange; head and thorax closely punctured. Antennæ black; head and thorax very sparsely punctured ..... *A. chilensis* Guér.  
*A. carbonaria* Burm.
25. Wings flavo-hyaline; abdomen with four or five interrupted yellow bands ..... 26.  
 Wings fusco-hyaline; abdomen with one or two yellowish lateral spots ..... 27.
26. Legs ferruginous ..... *A. antennata* Sm.  
 Legs black ..... \**A. erythropygæ* Burm.
27. Vertex smooth and shining; third dorsal segment only with lateral spots ..... *A. bipunctata* Perty.  
 Vertex sparsely punctured; second and third dorsal segments with whitish lateral spots ..... *A. albomaculata* Sm.

1. ANTHOBOSCA AUSTRALIS Sichel. (Pl. LXXXII. figs. 1, 2; Pl. LXXXIII. figs. 1, 3, 6, 14.)

*Cosila australis* Sichel, Sauss. et Sichel, Cat. spec. gen. *Scolia*, p. 261 (1864), ♀.

*Dimorphoptera scoliiformis* Sm. Trans. Ent. Soc. London, p. 238 (1868), ♀.

*Cosila (Callosila) australis* Sauss. in Grandidier, Hist. Madagascar, xx. p. 232 (1892), ♀.

*Dimorphoptera nigripennis* Sm. Trans. Ent. Soc. London, p. 239 (1868), ♂.

♀. The radial cell is pointed and detached from the costa at the apex, receiving the second transverse cubital nervure close to the middle, the second abscissa of the radius almost as long as the third. First recurrent nervure received close to the middle of the second cubital cell, second at one-third from the base of the third cubital cell. Third cubital cell fully half as long again on the cubital as on the radial nervure. Basal lobe of tarsal unguis bluntly rounded. Basal joint of hind tarsi with a scopa beneath, in which is a row of longer black spines. Sparsely punctured, shining; pronotum and scutellum more closely punctured; pygidium densely clothed with long black pubescence.

Black, with black pubescence. Wings fusco-violaceous. Length 28 mm.

♂. Second abscissa of the radius about half as long as the third. Basal lobe of tarsal unguis bluntly rounded. Apical joint of the flagellum about half as long again as the penultimate and slightly curved; the eighth, ninth, tenth, and eleventh joints subtuberculate in the middle beneath. Posterior tibiæ very feebly spined on the outer margin. Pronotum short, scarcely narrowed anteriorly. First abdominal segment very little longer than the second, broader at the apex than long. Head and thorax closely and not very minutely punctured.

Black, with cinereous pubescence, calcaria black. Wings fusco-violaceous.

Length 17 mm.

*Hab.* E. Coast of Australia between Sydney and Brisbane.

The association of the sexes is not certain. The structure of the male antennæ is very remarkable.

## 2. ANTHOBOSCA SIGNATA Sm.

*Myzine signata* Sm. Cat. Hym. B. M. iii. p. 75 (1855), ♀.

*Cosila biguttata* Sichel, Sauss. et Sichel Cat. spec. gen. *Scolia*, p. 262 (1864), ♀.

*Dimorphoptera signata* Sm. Trans. Ent. Soc. London, p. 238 (1868), ♀.

*Cosila (Callosila) signata* Sauss. in Grandidier, Hist. Madagascar, xx. p. 232 (1892), ♀.

Var. *Dimorphoptera morosa* Sm. Trans. Ent. Soc. London, p. 239 (1868), ♀.

♀. Radial cell pointed and detached from the costa at the apex, second recurrent nervure received at about one-quarter from the base of the second cubital cell. Other details of neurulation as in *australis* Sichel. Basal joint of hind tarsi with a comb of thickly set spines beneath. Basal lobe of tarsal unguis bluntly rounded. Shining and sparsely punctured, the front and pronotum more closely punctured; sixth dorsal segment of abdomen rugosely punctured.

Black, with whitish pubescence, the calcaria white. Wings fusco-violaceous. Third dorsal segment with an orange spot on each side.

Length 22 mm.

*Hab.* E. Australia, from Sydney to Cairns.

I look on *morosa* as a small variety in which the orange spots on the abdomen are wanting. The second abscissa of the radius is distinctly shorter than the third in the type of *morosa*, owing to the sharp curve toward the base in the second transverse cubital nervure, but I do not think that this distinction is of specific importance.

## 3. ANTHOBOSCA FASTUOSA Sm. (Pl. LXXXI. fig. 3.)

*Dimorphoptera fastuosa* Sm. Trans. Ent. Soc. London, p. 240 (1868), ♀.

*Myzine fastuosa* D. T. Cat. Hym. viii. p. 123 (1897).

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♀. Wings short, the length of the costa of the fore wing not exceeding two and a half times the breadth of the mesonotum. Radial cell broad, the apex detached from the costa and narrowly rounded. Third abscissa of the radius nearly half as long again as the second, and more than twice as long as the first; second transverse cubital nervure received at about two-fifths from the base of the radial cell. Second cubital cell not very strongly produced towards the base on the cubitus, receiving the first recurrent nervure near the middle, second recurrent nervure received just beyond one-quarter from the base of the third cubital cell. Basal joint of hind tarsi finely pectinate beneath; basal joint of fore tarsi with six spines above and about eight shorter ones beneath; basal lobe of tarsal unguis bluntly rounded. Sparsely punctured, more closely on the front, pronotum, and abdomen; the apical abdominal segments more strongly punctured than the three basal segments.

Rufo-testaceous; head, mesothorax, and three apical abdominal segments black; mandibles at the base and scape fusco-ferruginous; pubescence rufo-testaceous. Wings hyaline, tinged with yellow; nervures testaceous, the stigma black.

Length 17 mm.

*Hab.* Champion Bay, W. Australia.

The process beneath the hind femora near the apex is much less developed in this species than in most Australian species, though the femora are by no means convex beneath as in most of the South-American species and in *A. nubilipennis*.

#### 4. ANTHOBOSCA FLAVICORNIS Sauss.

*Cosila (Callosila) flavicornis* Sauss. in Grandidier, Hist. Madagascar, xx. p. 233 (1892), ♀.

♀. Radial cell with a slight angle at the apex; second abscissa of the radius shorter than the first, the third longer than the first and second combined, third cubital cell of about equal length on the radial and cubital nervures. Second cubital cell much produced towards the base on the cubitus; first recurrent nervure received about the middle of the second cubital cell, second just before the middle of the third cubital cell. Basal joint of hind tarsi with a scopa beneath, in which are a few spines longer than the hairs; basal joint of fore tarsi with six stout spines above and a row of very fine spines beneath; basal lobe of tarsal unguis rounded. The lobe beneath the apical portion of the hind femora has the lower margin nearly straight, only very slightly rounded, and is strongly developed. Shining and rather sparsely punctured, the anterior half of the pronotum and the median segment closely and finely punctured and subopaque.

Black, with white pubescence; the flagellum orange; calcaria white, the spines of the tibiae and tarsi reddish brown. Wings fusco-hyaline, nervures fuscous.

Length 11-14 mm.

*Hab.* Victoria.

There is also a specimen in the National Collection from Tasmania and another from Cairns, Queensland. In the former the radial cell is rounded at the apex and the tibiæ and tarsi are reddish; in the latter the radial cell is almost truncate at the apex, though narrowly, and the second abscissa of the radius is as long as the first. I do not think that small differences of neururation in this genus will prove to be of specific value.

#### 5. ANTHOBOSCA COGNATA Sm.

*Dimorphoptera cognata* Sm. Descr. new spec. Hymen. p. 188 (1879), ♀.

♀. Radial cell rather broadly rounded at the apex; the four abscissæ of the radius of about equal length; the third cubital cell much longer on the cubitus than on the radius. Recurrent nervures received close to the middle of the second and third cubital cells; the second cubital cell strongly produced toward the base on the cubitus. Basal joint of hind tarsi with a scopa beneath in which are five or six longer spines; basal joint of fore tarsi with six long and rather slender spines above and a closely set row of very small spines beneath; basal lobe of tarsal ungues less bluntly rounded than in *flavicornis*. The lobe beneath the apical half of the hind femora is very broadly rounded. Closely and finely punctured, more finely and closely on the abdomen and median segment than on the head and thorax, some larger punctures on the disc of the mesonotum.

Black, with sparse whitish pubescence; mandibles at the base and legs, except the coxæ, ferruginous.

Length 11 mm.

*Hab.* Swan River, Western Australia.

#### 6. ANTHOBOSCA STRANDI Turn.

*Anthobosca strandi* Turn. Proc. Zool. Soc. London, p. 306 (1910), ♀.

♀. Radial cell broadly rounded at the apex; second abscissa of the radius twice as long as the first and distinctly longer than the third; first recurrent nervure received at one-quarter from the base of the second cubital cell, second at one-fifth from the base of the third cubital cell. Apical lobe beneath the hind femora broadly rounded and strongly developed. Pronotum, median segment, and abdomen very finely and closely punctured, front coarsely and closely, mesonotum and scutellum less coarsely and rather sparsely punctured.

Black; the pubescence pale fulvous on the head and pronotum, grey on the sides of the abdomen, fusco-ferruginous on the apical dorsal segment; apex of the scape and flagellum beneath fusco-ferruginous, a dull ferruginous spot on each side close to the summit of the eyes; mandibles at the base, tegulæ, tibiæ, tarsi.

femora at the apex, and the whole of the hind femora ferruginous. Wings subhyaline, nervures fuscous, stigma ferruginous.

Length 13 mm.

*Hab.* E. Australia; probably from Victoria.

I have not a specimen of this species before me at the time of writing.

#### 7. ANTHOBOSCA ALBOPILOSA Turn.

*Anthobosca albopilosa* Turn. Proc. Linn. Soc. N.S.W. xxxii. p. 520 (1907), ♀.

♀. Radial cell slightly angular at the apex; third abscissa of the radius the longest, but shorter than the first and second combined, the first scarcely as long as the second. First recurrent nervure received near the middle of the second cubital cell, second just beyond one-quarter from the base of the third cubital cell. Second cubital cell less strongly produced towards the base than in *flavicornis*. Basal joint of hind tarsi with a scopa beneath, in which are a few longer spines; basal joint of fore tarsi with six or seven well-developed spines below and the usual six above; basal lobe of tarsal ungues rounded; lobe beneath the apical half of the hind femora broadly rounded and less strongly developed than in *flavicornis*. Deeply and rather closely punctured, the abdomen more shallowly punctured.

Black; the pubescence on the head and sides of the thorax white, on the abdomen and dorsal surface of the thorax black; calcaria black; four basal dorsal segments of abdomen and ventral segments 2-4 with apical ciliae of scale-like white hairs. Wings fuscous, with faint violet reflections.

Length 14 mm.

*Hab.* Queensland.

#### 8. ANTHOBOSCA ARGENTEOCINCTA Grib.

*Cosila argenteocincta* Gribodo, Ann. Mus. Civ. Stor. Nat. Genova, xviii. p. 261 (1883), ♀.

♀. Radial cell with a slight angle at the apex; second abscissa of the radius longer than the first, the third equal to the first and second combined, the third cubital cell a little longer on the cubitus than on the radius. First recurrent nervure received just beyond the middle of the second cubital cell, second at one-third from the base of the third cubital cell; the second cubital cell moderately produced towards the base on the cubitus. Basal joint of hind tarsi with a close row of small spines beneath; basal joint of fore tarsi with seven spines above, and a close-set row of slender spines beneath; basal lobe of tarsal ungues bluntly rounded; lobe beneath the basal half of the posterior femora broadly rounded. Shining, finely and very sparsely punctured; the median segment subopaque and very finely and closely punctured on the sides; abdomen shallowly but much more coarsely punctured.

Black, with sparse grey pubescence; flagellum beneath fuscous; tarsal ungues ferruginous; calcaria white. Wings light fuscous, shaded with bronze; nervures black.

Length 13 mm.

*Hab.* Adelaide, S. Australia.

I think I have identified this species correctly. Gribodo mentions a tubercle at the base of the first ventral segment, which does not seem to be any more developed in the specimen described above than in other species.

9. ANTHOBOSCA ANTHRACINA Sm. (Pl. LXXXII. fig. 3.)

*Myzine anthracina* Sm. Cat. Hym. B. M. iii. p. 71 (1855), ♀.

*Myzine sabulosa* Sm. Cat. Hym. B. M. iii. p. 76 (1855), ♀.

*Dimorphoptera anthracina* Sm. Trans. Ent. Soc. London, p. 238 (1868).

*Dimorphoptera sabulosa* Sm. Trans. Ent. Soc. London, p. 238 (1868).

*Ausrotiphia kirbyi* Cockerell, Bull. Mus. Comp. Anat. Harvard, p. 49 (1906), ♀.

♀. Radial cell very bluntly rounded at the apex; second abscissa of the radius shorter than the first, the third abscissa half as long again as the first and second combined. First recurrent nervure received just beyond the middle of the second cubital cell, which is more sharply produced towards the base than in *unicolor* Sm. or *levifrons* Sm.; second recurrent nervure received at two-fifths from the base of the third cubital cell, which is longer on the radius than on the cubitus. Basal joint of hind tarsi finely pectinate beneath; basal joint of fore tarsi with six spines above and eight finer beneath; basal lobe of tarsal ungues bluntly rounded. Finely and rather sparsely punctured, pronotum more coarsely punctured, median segment very finely and closely punctured with a smooth line in the middle.

Black with whitish pubescence; spines of the tibiæ and tarsi white, those of the anterior pair slightly reddish. Wings hyaline, shaded with fuscous towards the apex, nervures pale testaceous.

Length 14 mm.

*Hab.* S.E. Australia; Adelaide to Sydney.

The description is taken from the type of *anthracina*. The type of *sabulosa* has the first and second abscissæ of the radius about equal in length, combined equal to the third; the third cubital cell no longer on the radius than on the cubitus; the nervures are fuscous. But excepting in these points I cannot detect any difference, and do not consider that small differences of neurcation can be held to be of specific importance, considering how much variation occurs in other groups of Scoliidæ in such detail. The type of *Ausrotiphia kirbyi* is similar to *sabulosa*.

## 10. ANTHOBOSCA UNICOLOR Sm.

*Myzine unicolor* Sm. Cat. Hym. B. M. iii. p. 75 (1855), ♀.

*Dimorphoptera unicolor* Sm. Trans. Ent. Soc. London, p. 238 (1868), ♀.

*Cosila (Callosila) minuta* Sauss. in Grandidier, Hist. Madagascar, xx. p. 233 (1892), ♀.

♀. Radial cell rounded at the apex; second abscissa of the radius as long as the first, the two combined a little longer than the third; first recurrent nervure received a little before the middle of the second cubital cell, second before one-third from the base of the third cubital cell, which is much longer on the cubitus than on the radius; second cubital cell not very strongly produced towards the base. Basal joint of hind tarsi with a few small spines beneath; basal lobe of tarsal ungues rounded; lobe on the apical third of the hind femora beneath not very strongly prominent. Shining and sparsely punctured, the front closely and strongly punctured; median segment subopaque, very finely and closely punctured.

Black, with white pubescence; mandibles and scape beneath fuscous; calcaria white. Wings hyaline, faintly tinted with fuscous.

Length 10 mm.

*Hab.* Eastern Australia; Tasmania to Cairns.

## 11. ANTHOBOSCA LÆVIFRONS Sm.

*Dimorphoptera lævifrons* Sm. Descr. new spec. Hymen. p. 188, (1879), ♀.

*Myzine lævifrons* D. T. Cat. Hymen. viii. p. 124 (1897).

♀. Radial cell broadly rounded at the apex; second abscissa of the radius shorter than the first, the two combined longer than the third; first recurrent nervure received at two-fifths from the base of the second cubital cell, second just before the middle of the third cubital cell, which is much longer on the cubitus than on the radius. Basal joint of hind tarsi with a row of fine hairs beneath, in which are two or three longer spines; the lobe beneath the apical third of the hind femora broadly rounded. Basal lobe of tarsal ungues small and blunt. Shining, head and thorax very sparsely punctured, the front smooth; median segment and abdomen closely and minutely punctured.

Black, with sparse white pubescence; mandibles, flagellum beneath, and legs beneath fusco-ferruginous. Wings hyaline, tinged with fuscous; nervures fusco-ferruginous.

Length 7 mm.

*Hab.* Adelaide, S. Australia.

## 12. ANTHOBOSCA OCCIPITALIS, sp. n.

♀. *Nigra*, vertice macula utrinque supra oculos fusco-sanguinea; unguiculis bifidis; alis subhyalinis, venis fusco-ferrugineis.

Long. 14 mm

♀. Radial cell rounded at the apex; third abscissa of the radius shorter than the second; third cubital cell as long on the radius as on the costa; first recurrent nervure received just beyond one-third from the base of the second cubital cell, second at one-fifth from the base of the third cubital cell; second cubital cell not very strongly produced towards the base. Tarsal unguis bifid, without a basal lobe; basal joint of hind tarsi with rather long hairs beneath; lobe beneath the apical half of the hind femora broadly rounded. Closely punctured; rather strongly on the head, finely on the thorax, coarsely on the scutellum, rather sparsely and shallowly on the abdomen; sixth dorsal segment rather broadly truncate at the apex.

Black, with grey pubescence, a fusco-sanguineous spot on the vertex on each side close to the summit of the eyes; sixth dorsal segment fuscous at the apex, calcaria whitish.

*Hab.* S. Australia; probably from Adelaide.

This species is remarkable for the very long second abscissa of the radius, and may be easily distinguished from the majority of Australian species by the bifid tarsal unguis.

### 13. ANTHOBOSCA NUBILIPENNIS Turn.

*Anthobosca nubilipennis* Turn. Proc. Zool. Soc. London, p. 307 (1910), ♀.

♀. Radial cell detached from the costa for fully half its length, slightly angular at the apex; second abscissa of the radius longer than the first and about equal in length to the third; first recurrent nervure received beyond two-thirds from the base of the second cubital cell, second before one-quarter from the base of the third cubital cell, which is nearly twice as long on the cubitus as on the radius. Tarsal unguis bifid, without a basal lobe; hind femora convex beneath, the lobe not apical but almost medial; basal joint of hind tarsi with three or four short spines beneath. Deeply but not very closely punctured; mesonotum and scutellum very sparsely punctured; sixth dorsal abdominal segment coarsely striated at the base, rounded at the apex.

Black, with white pubescence; calcaria black. Wings fuscohyaline, nervures fuscous; the stigma small. Median segment abruptly truncate.

Length 16 mm.

*Hab.* Perth district, S.W. Australia.

A very distinct species in the characters of the hind legs, neuration, and median segment.

### 14. ANTHOBOSCA CLYPEATA Sm. (Pl. LXXXI. fig. 2; Pl. LXXXII. fig. 5; Pl. LXXXIII. fig. 7.)

*Dimorphoptera clypeata* Sm. Trans. Ent. Soc. London, p. 239 (1868), ♀.

♀. Radial cell rounded at the apex, detached from the costa

at the extreme apex only; second abscissa of the radius twice as long as the first and about equal in length to the third; second cubital cell receiving both recurrent nervures, the first at one-third from the base, the second just before the apex; third cubital cell as long on the radius as on the cubitus. Tarsal unguis bifid; lobe beneath the apical half of the hind femora strongly rounded; basal joint of hind tarsi with a row of short hairs beneath, in which are a few longer spines. Closely punctured; the thorax very closely and finely punctured, with larger and sparser punctures intermixed; abdomen shining and sparsely punctured.

Black, with whitish pubescence; sixth dorsal segment densely clothed with long golden hairs; clypeus except at the apex and the margins of the eyes broadly interrupted on the summit, yellow; basal two-thirds of dorsal segments 2-4 and of ventral segments 2-3 emarginate in the middle posteriorly, rufotestaceous. Wings subhyaline, nervures fusco-ferruginous.

Length 22 mm.

*Hab.* Swan River, W. Australia.

An obscure scar runs from the base of the stigma to close to the base of the first transverse cubital nervure. I have little doubt that the male of this species will prove to be *A. crassicornis* Sm., which corresponds with it in the position of the recurrent nervures, the bifid tarsal unguis, and also to some extent in the colour of the clypeus and abdomen.

\*15. *ANTHOBOSCA FASCICULATA* Sichel.

*Cosila (Colobosila) fasciculata* Sichel, Sauss, et Sichel, Cat. spec. gen. *Scolia*, p. 263 (1864), ♀.

*Hab.* Australia.

I fail to recognise this species with any certainty, but do not consider that the subgenus *Colobosila* can stand, the truncation of the apex of the radial cell being insufficient as a subgeneric character unless supported by others.

\*16. *ANTHOBOSCA INORNATA* Sauss.

*Cosila inornata* Saussure in Grandidier, Hist. Madagascar, xx. p. 233 (1892), ♀.

I do not recognise this species as a synonym of any known to me, though it seems to be related to *A. anthracina*, differing in the position of the first recurrent nervure. Considering how unreliable the details of neurulation are in this genus, it is quite possible that it is only a variety of *anthracina*.

\*17. *ANTHOBOSCA MELANARIA* Cam.

*Plesia melanaria* Cam. Rec. Albany Mus. i. 5, p. 297 (1905), ♀.

♀. From the description I have no doubt that this is an *Anthobosca*, the characters "apex of radial cell sharply pointed," and "pygidium piceous red, its base fringed with long, bright rufous hair," and "metapleuræ smooth," agreeing much better

with *Anthobosca* than *Plesia*. Although the two genera belong to different subfamilies of the Scoliidae, the females are likely to be confused by a beginner. Cameron places male Scoliidae of the subfamily Anthoboscinae in the Thynnidae, and females of the same group with the Scoliidae of the subfamily Elidinae.

\*18. ANTHOBOSCA DONALDSONI FOX.

*Cosila donaldsoni* Fox, Proc. Acad. Philadelphia, p. 549 (1896), ♀.

♀. Third transverse cubital nervure received close to the apex of the radial cell. Clypeus tridentate on the anterior margin. Head and thorax very coarsely punctured, pronotum and scutellum scabrous; median segment finely striato-punctate, the sides obliquely striated; abdomen strongly but sparsely punctured, sixth dorsal segment striato-punctate; tarsal ungues cleft.

Black, with greyish pubescence; two apical abdominal segments red; calcaria whitish. Wings black, strongly violaceous.

Length 18 mm.

*Hab.* Somaliland.

I have not seen this species, but the description corresponds almost exactly with *Elis aliciae* described in this paper, though the clypeus in that species is not distinctly tridentate. But I do not believe that Fox would have confused the genera.

19. ANTHOBOSCA INSULARIS Sm. (Pl. LXXXII. fig. 6; Pl. LXXXIII. fig. 8.)

*Myzine insularis* Sm. Descr. new spec. Hymen. p. 178 (1879), ♀.

*Cosila insularis* Saussure in Grandidier, Hist. Madagascar, xx. p. 231 (1892), ♀.

♀. Radial cell subacute at the apex, receiving the third transverse cubital nervure very near the apex, in some specimens almost at the apex; second abscissa of the radius longer than the first, the two combined not quite as long as the third; first recurrent nervure received at two-fifths from the base of the second cubital cell, second at one-quarter from the base of the third cubital cell, which is nearly or quite as long on the radius as on the cubitus. Tarsal ungues bifid; hind femora very broadly rounded beneath on the apical two-thirds, basal joint of hind tarsi with three long spines beneath. Shining and sparsely punctured, closely on the front and closely and very finely on the median segment.

Black, with black pubescence; calcaria brown. Wings flavo-hyaline, nervures ferruginous.

Length 23-29 mm.

*Hab.* Madagascar.

The type has a rufous spot in the middle of the first dorsal segment, and obscure reddish shading on the head and thorax.



## 20. ANTHOBOSCA NATALICA Turn.

*Anthobosca natalica* Turn. Trans. Ent. Soc. London, p. 85 (1908), ♀.

♀. Radial cell narrowly rounded at the apex, subacute; third abscissa of the radius twice as long as the second, the fourth shorter than the first; first recurrent nervure received just beyond the middle of the second cubital cell, second before the middle of the third cubital cell, which is as long on the radius as on the cubitus. Tarsal unguis bifid; basal joint of hind tarsi with a scopa beneath. Shining and sparsely punctured, more closely on the front and pronotum; median segment very finely and closely punctured; abdomen finely but more sparsely punctured.

Black; pubescence on the apical dorsal segment brown and long; tegulae and extreme apical margin of the abdominal segments testaceous brown; calcaria whitish; fore tarsi fusco-ferruginous. Wings fusco-hyaline, nervures fusco-ferruginous.

Length 12–17 mm.

*Hab.* Malvern, Natal.

The neuration given is as in the type, but in another specimen the second abscissa of the radius is much more than half as long as the third, and both recurrent nervures are received nearer the base of the cells.

## 21. ANTHOBOSCA ERYTHRONOTA Cam. (Pl. LXXXI. figs. 5, 6; Pl. LXXXII. fig. 4.)

*Plesia erythronota* Cam. Rec. Albany Mus. i. 5, p. 320 (1905).

♀. *Nigra*; *prothorace, mesothorace, tibiis tarsisque rufo-ferrugineis*; *segmentis abdominalibus 2–4 macula laterali alba utrinque*; *alis fusco-hyalinis, venis nigris.*

♂. *Niger, gracilis*; *mandibulis basi, clypeo, oculis margine interiore, pronoto late postice, tegulis, mesonoto macula, mesopleuris macula, scutello macula mediana, postscutello macula mediana transversa, segmentisque abdominalibus 2–4 macula magna transversa utrinque albido-flavis*; *pedibus nigris albo-variegatis*; *alis hyalinis, venis nigris.*

*Variat* ♀ *prothorace mesothoraceque nigris.*

*Long.*, ♀ 10–11 mm., ♂ 8–11 mm.

♀. Clypeus shining in the middle and somewhat flattened, narrowly truncate at the apex. Head convex, broader than long, not much broader than the thorax; rather sparsely punctured, the space round the base of the antennae closely punctured and clothed with fulvous hairs. Eyes touching the base of the mandibles, the line of the interior margin slightly undulating; posterior ocelli much nearer to each other than to the eyes. Thorax rather sparsely punctured; pronotum slightly emarginate anteriorly, the posterior margin widely but not strongly arched; the projection of the mesosternum between the intermediate coxae very deeply bilobed. Median segment very finely and closely

punctured, the posterior slope very steep. Abdomen rather closely punctured; the apical margins of the segments rather broadly depressed and smooth, more broadly in the middle than at the sides, the apical segment testaceous and thickly covered with fulvous bristles. Radial cell bluntly rounded at the apex, not detached from the costa; second abscissa of the radius a little longer than the first, but scarcely more than half as long as the third, the third cubital cell longer on the radius than on the cubitus, second recurrent nervure received at about one-quarter from the base of the third cubital cell. Ungues cleft.

♂. Clypeus slightly convex, rather narrowly truncate at the apex and armed with a row of three very minute teeth. Antennæ no longer than the thorax and median segment combined, tapering slightly towards the apex. Eyes convergent towards the clypeus, the inner margin almost straight. Head and thorax finely and closely punctured; pronotum strongly narrowed anteriorly, the anterior margin slightly emarginate, posterior margin strongly arched. Abdomen shagreened, very slender, slightly tapering to the extremities, the basal segment distinctly longer than the second. Hind tibiæ finely serrate, all the tarsal ungues cleft. Second abscissa of the radius half as long again as the first and only a little more than half as long as the third, second recurrent nervure received at about one-quarter from the base of the third cubital cell.

*Hab.* Willowmore, Cape Colony; November to January (*Dr. Brauns*).

The male comes very near Cameron's genus *Odontothynnus*, which I have elsewhere treated with some doubt as a synonym of *Anthobosca*; but Cameron states that the posterior tarsal ungues in his genus are simple. Even if he is correct as to this character it would not be sufficient to justify the formation of a genus on one sex only, and his remarks show that he has no knowledge of the genus *Anthobosca*. I suspect that the present species may prove to be identical with *Plesia leucospila* Cam., with the description of which it agrees fairly well, but the mesopleuræ are rather strongly though not very closely punctured, not almost smooth as in Cameron's description. In the broadly rounded apex of the radial cell this species differs from *A. natalica* Turn., in which the cell is subacute, but agrees with *A. arabica* Turn.

\*22. ANTHOBOSCA LEUCOSPILA Cam.

*Plesia leucospila* Cam. Rec. Albany Mus. i. 5, p. 319 (1905), ♀.

♀. It is almost certain that Cameron has misplaced this species. It is possibly identical with *A. erythronota* Cam., which has a similar colour variety, in which case the name *leucospila* should be used for the species. But Cameron states that the pleuræ are almost smooth, whereas in *erythronota* the mesopleuræ

are strongly though not closely punctured. But this is possibly an error in Cameron's description.

\*23. ANTHOBOSCA SAUAKINENSIS Magr.

*Myzine sauakinensis* Magr. Ann. Mus. Civ. Genova, xxi. p. 560 (1884), ♀.

I think it probable that *A. arabica* Turn. is only a colour variety of this species, with the abdomen black instead of ferruginous. The difference in size between the two forms is considerable, but both size and colour vary much in this genus. But as I have not seen *sauakinensis* I think it better to keep the two separate at present.

24. ANTHOBOSCA ARABICA Turn.

*Anthobosca arabica* Turn. Trans. Ent. Soc. London, p. 397 (1910), ♀.

♀. Radial cell broadly rounded at the apex; second abscissa of the radius longer than the first, the two combined equal in length to the third, first recurrent nervure received a little before the middle of the second cubital cell, second before one-third from the base of the third cubital cell, which is as long on the radius as on the cubitus. Tarsal unguis bifid; the lobe beneath the hind femora occupying nearly the whole length of the joint and scarcely rounded; basal joint of fore tarsi with a comb of nine rather short spines on the outer margin and a row of short fine spines on the inner margin, the outer angle strongly produced and almost reaching the apex of the second joint. Shining, finely and sparsely punctured, more closely on the front and pronotum.

Black, with grey pubescence, a narrow band on the inner margin of the eyes, continued and arched on the vertex, a spot on the front, hind margin, and anterior angles of the pronotum, a curved band on the scutellum, a median spot and the posterior angles on the median segment, and a transverse band on each side on dorsal segments 1-4 pale yellow; mandibles, tegulae, tarsi, and pygidium testaceous brown.

Length 9 mm.

*Hab.* Aden district.

25. ANTHOBOSCA MINIMA Turn.

*Anthobosca minima* Turn. Trans. Ent. Soc. London, p. 398 (1910), ♀.

♀. Radial cell narrowly truncate at the apex; second abscissa of the radius more than twice as long as the first, but much shorter than the third. Tarsal unguis bifid. Shining, sparsely and finely punctured; apical dorsal segment strongly punctured and covered with stiff fulvous hairs.

Black; mandibles, antennae, and legs testaceous brown;

abdomen dark reddish brown; yellow marks as in *arabica*, but the yellow band on each side of the first dorsal segment is absent.

Length 5 mm.

*Hab.* Mombasa.

## 26. ANTHOBOSCA CHILENSIS Guér.

*Cosila chilensis* Guér. Voy. 'Coquille,' Zool. ii. p. 249 (1839), ♀; Spinola, in Gay's Hist. Fis. Chile, Zool. vi. p. 312 (1851), ♂ ♀.

*Myzine flavicornis* Sm. Descr. new spec. Hymen. p. 183 (1879), ♀.

♀. Radial cell rounded at the apex; second abscissa of the radius twice as long as the first, but distinctly shorter than the third; first recurrent nervure received close to the middle of the second cubital cell, second at about one-fifth from the base of the third cubital cell. Tarsal ungues bifid; lobe beneath the apical third of the hind femora scarcely rounded, basal joint of hind tarsi with a thinly-set row of very short spines beneath. Finely and rather closely punctured, median segment finely rugulose; abdomen shining, very finely and sparsely punctured. Basal joint of fore tarsi not strongly produced at the outer apical angle.

Black, with long black pubescence; calcaria black; flagellum bright orange. Wings fusco-violaceous.

♂. Third abscissa of the radius twice as long as the second in some specimens, shorter than the second in others; first recurrent nervure received by the second cubital cell at a distance from the base slightly less than the length of the first transverse cubital nervure, second either interstitial with the second transverse cubital nervure or received a little before the apex of the second cubital cell. Apical joint of antennæ no longer than the penultimate. Basal abdominal segment nearly twice as broad at the apex as long. Very finely and closely punctured, minutely on the abdomen.

Colours as in the female.

Length, ♀ 22 mm., ♂ 16 mm.

*Hab.* Chile.

## 27. ANTHOBOSCA CARBONARIA Burm.

*Myzine carbonaria* Burm. Stett. ent. Zeit. xxxvii. p. 168 (1876), ♀.

*Anthobosca carbonaria* Turn. Trans. Ent. Soc. London, p. 83 (1908), ♀.

*Cosila carbonaria* Bréthes, Ann. Mus. Buen. Aires, xx. p. 256 (1910), ♀.

♀. Radial cell narrowly rounded at the apex; second abscissa of the radius longer than the first and third combined; first recurrent nervure received at about two-fifths from the base of

the second cubital cell, second before one-third from the base of the third cubital cell, which is nearly twice as long on the cubitus as on the radius. Basal joint of hind tarsi with a row of fine spines beneath; basal joint of fore tarsi with seven spines above and a row of short spines beneath; tarsal ungues cleft; apical half of hind femora broadly rounded beneath; tarsal ungues cleft. Shining, finely and sparsely punctured; front and pronotum more closely and coarsely punctured; median segment subopaque, very finely and closely punctured, the posterior slope rather indistinctly transversely striated. Pygidium densely clothed with fusco-ferruginous pubescence. Basal joint of fore tarsi not very strongly produced at outer angle.

Black, with grey pubescence; calcaria pale brownish. Wings rather light fuscous, fusco-hyaline at the apex.

Length 20 mm.

*Hab.* Nova Fribourg, S. Brazil.

28. *ANTHOBOSCA BIPUNCTATA* Perty.

*Tiphia bipunctata* Perty, Delect. anim. artic. Brasil. p. 139 (1833), ♀.

*Myzine bipunctata* Sm. Cat. Hym. B. M. iii. p. 76 (1855).

*Anthobosca bipunctata* Turn. Trans. Ent. Soc. London, p. 83 (1908).

♀. Radial cell narrowly rounded at the apex; first and fourth abscissæ of the radius about equal in length, second and third also nearly equal to each other and twice as long as the first; the first recurrent nervure received just beyond two-fifths from the base of the second cubital cell, second at the middle of the third cubital cell, which is shorter on the radius than on the cubitus. Tarsal ungues bifid; lobe beneath the posterior femora extending over the apical two-thirds of their length and scarcely rounded. Shining and very sparsely punctured, the front smooth, apical dorsal segment covered with long fuscous hair. Basal joint of fore tarsi strongly produced at the outer apical angle.

Black; a yellow spot on each side of the third dorsal segment. Wings fusco-hyaline, nervures fuscous; calcaria whitish.

Length 16 mm.

*Hab.* Minas Geraes, Brazil.

Allied to *carbonaria* Burm., but has the lobe beneath the hind femora longer, the basal joint of the fore tarsi is more produced, and the puncturation is sparser. *A. bipustulata* Turn. is probably the male of this species.

29. *ANTHOBOSCA ALBOMACULATA* Sm. (Pl. LXXXI. figs. 7, 8.)

*Myzine albomaculata* Sm. Descr. new spec. Hymen. p. 181 (1879), ♀ ♂.

*Myzine lecointei* Dücke, Rev. entom. p. 146 (1907), ♀.

♀. Radial cell narrowly rounded at the apex; second abscissa

of the radius a little longer than the first, the third longer than the first and second combined; first recurrent nervure received just beyond two-fifths from the base of the second cubital cell, second close to the middle of the third cubital cell. Tarsal ungues bifid; lobe beneath the basal half of the hind femora not very prominent and very feebly rounded; basal joint of hind tarsi with a row of short hairs beneath; basal joint of fore tarsi strongly produced at the outer apical angle. Shining and sparsely punctured; median segment opaque, closely and minutely punctured; apical dorsal segment coarsely punctured and thickly clothed with long fuscous hairs.

Black; a spot on each side near the anterior angles of the pronotum, a spot on the mesonotum, a spot at the base of the median segment and one at each of the posterior angles, and a spot on each side of the second and third dorsal segments yellowish white; calcaria whitish. Wings pale fusco-hyaline, nervures fuscous.

♂. Second abscissa of radius twice as long as first, third about half as long again as second; first recurrent nervure received a little beyond the middle of the second cubital cell, second at two-fifths from the base of the third cubital cell. Tarsal ungues bifid; hind tibiæ serrate on the outer margin. Basal abdominal segment nearly half as long again as the breadth at the apex. Finely and rather closely punctured, abdomen finely shagreened.

Black; mandibles, clypeus, scape beneath, a spot on each side of the pronotum, a spot on the mesonotum, a spot on the scutellum, one on the postscutellum, another at the apex of the median segment, the base of the tibiæ, and the tarsi pale yellow. Wings hyaline iridescent, nervures nearly black.

Length, ♀ 12 mm., ♂ 9 mm.

*Hab.* Amazon, from Para to Ega.

### 30. ANTHOBOSCA ANTENNATA Sm.

*Anthobosca antennata* Sm. Descr. new spec. Hymen. p. 174 (1879), ♂.

*Cosila jheringi* Saussure in Grandidier, Hist. Madagascar, xx. p. 234 (1892), ♀.

*Thynnus antennatus* D. T. Cat. Hymen. viii. p. 101 (1897), ♂.

♀. Radial cell very narrowly rounded at the apex; third abscissa of radius half as long again as the second, which is nearly twice as long as the first, the fourth shorter than the first; first recurrent nervure received a little before the middle of the second cubital cell, second at one-fifth from the base of the third cubital cell. Tarsal ungues bifid; lobe beneath the hind femora commencing near the base and extending to the apex, broadly rounded; basal joint of hind tarsi with a row of very short fine spines beneath; basal joint of fore tarsi strongly produced at the outer apical angle. Shining, very finely and rather sparsely punctured; median segment subopaque, very closely and minutely

punctured; apical dorsal segment densely clothed with long fulvous hairs.

Black; mandibles at the base, antennæ, and legs ferruginous; an interrupted band on the posterior margin of the pronotum, a spot on the mesonotum, one at the base of the median segment and another at each of the posterior angles, and an interrupted band on the four basal dorsal segments, more broadly interrupted on the second than on the other segments, yellow. Wings very pale flavo-hyaline, nervures ferruginous.

♂. Third abscissa of the radius half as long again as the second, which is about equal to the fourth and twice as long as the first; first recurrent nervure received at or a little beyond the middle of the second cubital cell, second at one-third from the base of the third cubital cell. Tarsal ungues bifid; hind tibiæ serrate on the outer margin. Antennæ short and stout, tapering to the apex; pronotum rounded anteriorly; first abdominal segment a little longer than the breadth at the apex, the apical dorsal margin of the segment broadly rounded. Finely and closely punctured; abdomen finely shagreened.

Black; mandibles, clypeus, scape beneath, posterior margin of the pronotum broadly, a spot on the mesonotum, one on the scutellum, another on the postscutellum, and the greater part of the tibiæ and tarsi yellow. Wings hyaline, nervures fuscous.

Length, ♀ 13-16 mm., ♂ 12-14 mm.

*Hab.* S. Brazil; Rio Grande do Sul.

As I have noticed before, the antennæ in the type of *antennata* are a little shorter and stouter than in the males sent with *jheringi*. This difference may possibly prove to be specific, but I do not think it is.

\*31. ANTHOBOSCA ERYTHROPYGA Burm.

*Myzine erythropygæ* Burm. Stett. ent. Zeit. xxxvii. p. 169 (1876), ♀ ♂.

*Anthobosca erythropygæ* Turn. Trans. Ent. Soc. London, p. 83 (1908).

*Cosila erythropygæ* Bréthes, Ann. Mus. Buen. Aires, xx. p. 256 (1910).

I have not seen this species. Schrottky suggests that it is identical with *A. jheringi* Sauss., but Burmeister's description gives the legs of the male as red, of the female black, and the five basal abdominal segments in both sexes with lateral yellow spots, whereas in *jheringi* the four basal segments are banded with yellow and the legs red in the female, and the male has the abdomen without yellow marks and the legs yellow and black. I do not think there is sufficient ground for considering the two to be identical, especially as Schrottky had not seen specimens of *jheringi*.

## \*32. ANTHOBOSCA APICALIS Sichel.

*Cosila apicalis* Sichel, Sauss. et Sichel, Cat. spec. gen. *Scolia*, p. 262 (1864), ♀.

I have not seen this species, which may possibly be identical with *carbonaria* Burm., but the dorsal segments of that species are not reddish laterally.

*Males.*

- |   |   |
|---|---|
| 1. Species from the Old World.....  | 2.  |
| Species from South America.....   | 18.   |
| 2. Australian species .....   | 3.  |
| African species .....   | 14.   |
| 3. Tarsal ungues with a blunt lobe at the base; second and third cubital cells each receiving a recurrent nervure .....   | 4.  |
| Tarsal ungues bifid, without a basal lobe; second cubital cell receiving both recurrent nervures.....   | <i>A. crassicornis</i> Sm.                                |
| 4. Eighth and three following joints of the flagellum subtuberculate beneath, apical joint longer than penultimate and slightly curved. Wings fusco-violaceous...<br>None of the joints of the flagellum subtuberculate beneath, apical joint no longer than penultimate. Wings hyaline or subhyaline ..... | 5.  |
| 5. First abdominal segment distinctly longer than the second; fully half as long again as its breadth at the apex .....   | <i>A. australis</i> Sichel<br>(= <i>nigripennis</i> Sm.). |
| First abdominal segment not distinctly longer than the second; scarcely, if at all, longer than its apical breadth .....  | <i>A. australasie</i> Guér.                               |
| 6. Thorax and abdomen wholly black .....  | 6.  |
| Pronotum at least marked with yellow .....  | 7.  |
| 7. Legs ferruginous .....   | 9.  |
| Legs black .....  | <i>A. varipes</i> Sm.                                     |
| 8. Median segment transversely rugulose, very short and broad; anterior tibiæ black beneath .....   | 8.  |
| Median segment finely punctured, not very short or broad; anterior tibiæ ferruginous beneath .....  | <i>A. ethiops</i> Sm.                                     |
| 9. Legs ferruginous.....  | 10.   |
| Legs black, more or less marked with yellow.....  | 11.   |
| 10. Postscutellum yellow, legs marked with yellow; first transverse cubital nervure as long as the second or longer and strongly bent near the cubitus .....  | <i>A. torresensis</i> Turn.                               |
| Postscutellum and legs without yellow markings; first transverse cubital nervure much shorter than the second, and not bent near the cubitus.....   | <i>A. gilesi</i> Turn.                                    |
| 11. Five basal abdominal segments with yellowish lateral spots; cubitus of hind wing originating just before the transverse median nervure, almost interstitial ...   | <i>A. moderata</i> Turn.                                  |
| Five basal abdominal segments immaculate; cubitus of hind wing originating very distinctly before the transverse median nervure .....   | 12.   |
| 12. Seventh dorsal segment with yellowish lateral spots; postscutellum yellowish .....  | 13.   |
| Seventh dorsal segment and postscutellum immaculate .   | <i>A. frenchi</i> Turn.                                   |
| 13. Clypeus black; mesonotum without a yellow spot; hind tibiæ feebly spinose .....   | <i>A. longipalpa</i> Turu.                                |
| Clypeus yellow; mesonotum with a yellow spot; hind tibiæ feebly serrate .....   | <i>A. lagardei</i> Turu.                                  |
| 14. Apical margin of clypeus not toothed .....  | 15.   |
| Apical margin of clypeus with two small teeth .....   | 16.   |



- |  |                               |
|--|-------------------------------|
| 15. Legs wholly ferruginous; mesonotum with a yellow spot; tegulæ black.....   | <i>A. errans</i> Sm.          |
| Legs ferruginous marked with yellow; mesonotum immaculate; tegulæ yellow ..... | <i>A. flavopicta</i> Turn.    |
| 16. Wings hyaline .....  | 17.                           |
| Apical half of wings with a distinct fusco-violeaceous tinge .....             | <i>A. bidentata</i> Cam.      |
| 17. Abdomen immaculate .....   | <i>A. lacteipennis</i> Cam.   |
| Dorsal abdominal segments 2-4 with large yellowish lateral spots .....         | <i>A. erythronota</i> Cam.    |
| 18. Antennæ orange; wings fusco-violeaceous .....                              | <i>A. chilensis</i> Guér.     |
| Antennæ black; wings hyaline .....   | 19.                           |
| 19. Abdomen spotted with yellow .....  | * <i>A. erythropyga</i> Burm. |
| Abdomen immaculate .....   | 20.                           |
| 20. Legs ferruginous .....   | <i>A. bipustulata</i> Turn.   |
| Legs black, marked with yellow .....   | 21.                           |
| 21. Length 13 mm. Yellow band on pronotum entire .....                         | <i>A. antennata</i> Sm.       |
| Length 10 mm. Yellow band on pronotum interrupted.                             | <i>A. albomaculata</i> Sm.    |

### 33. ANTHOBOSCA AUSTRALASIE Guér. (Pl. LXXXIII. fig. 13.)

*Anthobosca australasie* Guérin; Duperry, Voy. 'Coquille,' Zool. ii. p. 237 (1839), ♂.

*Anthobosca crabroniformis* Sm. Cat. Hym. B. M. vii. p. 59 (1859), ♂.

*Thynnus cathreinii* D. T. Cat. Hym. viii. p. 103 (1897), ♂.

♂. Pronotum much narrowed anteriorly, nearly as long as the scutellum. First dorsal abdominal segment slender, more than half as long again as the apical breadth, much longer than the second segment. Seventh dorsal segment very broadly rounded at the apex. Hind tibiæ feebly spined. Third abscissa of the radius longer than the first and second combined; first recurrent nervure received close to the middle of the second cubital cell, second at one-quarter from the base of the third cubital cell; first transverse cubital nervure curved, not sharply bent at the base. Cubitus of the hind wing originating before the transverse median nervure, separated from it by a distance exceeding half the length of that nervure.

Black; mandibles, clypeus, margins of the eyes interrupted on the summit, pronotum very broadly posteriorly, tegulæ, a quadrate spot on the mesonotum, a spot on the mesopleuræ, the middle of the scutellum and postscutellum, a curved transverse band at the apex of the median segment, an interrupted transverse band on dorsal segments 2-4, sometimes also a spot on each side of the first and fifth segments, a spot on the anterior coxæ and a line on the anterior tibiæ yellow; legs ferruginous. Wings hyaline, tinged with yellow; nervures ferruginous.

Length 16 mm.

*Hab.* New South Wales, Queensland, as far north as Cairns.

The female is unknown, but the range of the species is about the same as that of *signata* Sm.

## 34. ANTHOBOSCA GILESI Turn.

*Anthobosca gilesi* Turn. Proc. Zool. Soc. London (1910), p. 308, ♂.

♂. Antennæ shorter than the thorax and median segment combined; pronotum much narrowed anteriorly, shorter than the scutellum. First dorsal segment as broad at the apex as long, a little shorter than the second segment. Seventh dorsal segment subtruncate at the apex. Neuration similar to that of *A. australasie*, but the position of the first recurrent is variable—it is received beyond the middle of the second cubital cell in the type, but at the middle in another specimen.

Black; the base of the mandibles, part of the clypeus, the pronotum very broadly posteriorly, and the tegulæ yellow; legs ferruginous. Wings hyaline, nervures fuscous. Calcaria white.

Length 11–14 mm.

*Hab.* Perth, West Australia.

## 35. ANTHOBOSCA TORRESENSIS Turn.

*Anthobosca torresensis* Turn. Proc. Linn. Soc. N.S.W. xxxii. p. 518 (1907), ♂.

♂. Pronotum narrowed anteriorly, nearly as long as the scutellum. First dorsal segment as broad at the apex as long, no longer than the second segment; seventh dorsal segment narrowly truncate at the apex. Second abscissa of the radius shorter than the first, the two combined much shorter than the third. First transverse cubital nervure longer than the second, very sharply bent near the cubitus; first recurrent nervure received close to the middle of the second cubital cell, second beyond one-quarter from the base of the third cubital cell.

Black; legs ferruginous; mandibles at the base, scape beneath, pronotum very broadly posteriorly, postscutellum, and a line on the anterior tibiæ yellow. Wings hyaline, nervures fuscous. Calcaria whitish.

The hind tibiæ are almost smooth, the spines nearly obsolete. Neuration of hind wing as in *A. australasie*.

Length 7–8 mm.

*Hab.* Cape York, Queensland.

## 36. ANTHOBOSCA VARIPES Sm.

*Anthobosca varipes* Sm. Cat. Hym. B. M. vii. p. 59 (1859), ♂.

*Thynnus fischeri* D. T. Cat. Hym. viii. p. 106 (1897), ♂.

♂. Pronotum shorter than the scutellum, not very strongly narrowed anteriorly; scutellum with a delicate carina from the base to the apex. First dorsal segment nearly as broad at the apex as long, very little longer than the second segment; seventh dorsal segment broadly subtruncate at the apex. Hind tibiæ very feebly serrate. First transverse cubital nervure

oblique, not sharply bent near the cubitus, longer than the second. Second abscissa of the radius about twice as long as the first, the two combined shorter than the third. First recurrent nervure received distinctly beyond the middle of the second cubital cell, second beyond one-third from the base of the third cubital cell. Hind wing as in *A. australasiæ*. Apical joint of maxillary palpi as in *A. australasiæ*, not filiform and scarcely longer than the penultimate joint.

Black; the legs ferruginous. Wings hyaline, nervures fuscous.

Length 12–15 mm.

*Hab.* Adelaide, S. Australia; Ararat and Ringwood, Victoria.

### 37. ANTHOBOSCA NIGRA Sm.

*Anthobosca nigra* Sm. Cat. Hym. B. M. vii. p. 59 (1859), ♂.

*Thynnus reischii* D. T. Cat. Hymen. viii. p. 114 (1897), ♂.

♂. Clypeus truncate at the apex; antennæ nearly as long as the thorax and median segment combined. Pronotum short, scarcely more than half as long as the scutellum, very slightly narrowed anteriorly. First dorsal segment longer than the apical breadth; seventh dorsal segment broadly rounded at the apex. Hind tibiæ rather feebly serrate; hind femora without a lobe at the apex beneath. Second abscissa of the radius longer than the first, the two combined much shorter than the third; first transverse cubital nervure oblique, sharply bent close to the cubitus; first recurrent nervure received at the middle of the second cubital cell, second at two-fifths from the base of the third cubital cell. The distance between the cubitus of the hind wing and the transverse median nervure is greater than half the length of that nervure.

Black; the fore tibiæ ferruginous within; calcaria whitish. Wings hyaline, nervures fuscous.

Length 9–12 mm.

*Hab.* Victoria and South Australia.

Differs from *varipes* in the absence of a carina on the scutellum, in the colour of the legs, and the more distinct serration of the hind tibiæ.

### 38. ANTHOBOSCA ÆTHIOPS Sm.

*Anthobosca æthiops* Sm. Descr. new spec. Hymen. p. 175 (1879), ♂.

*Thynnus stolzii* D. T. Catal. Hymen. viii. p. 116 (1897), ♂.

♂. Antennæ stouter than in other Australian species; pronotum very slightly narrowed anteriorly, shorter than the scutellum. Head and thorax very closely and finely punctured, median segment transversely rugulose, short and not as strongly convex as in other species. First dorsal segment very little longer than the apical breadth; seventh dorsal segment narrowly